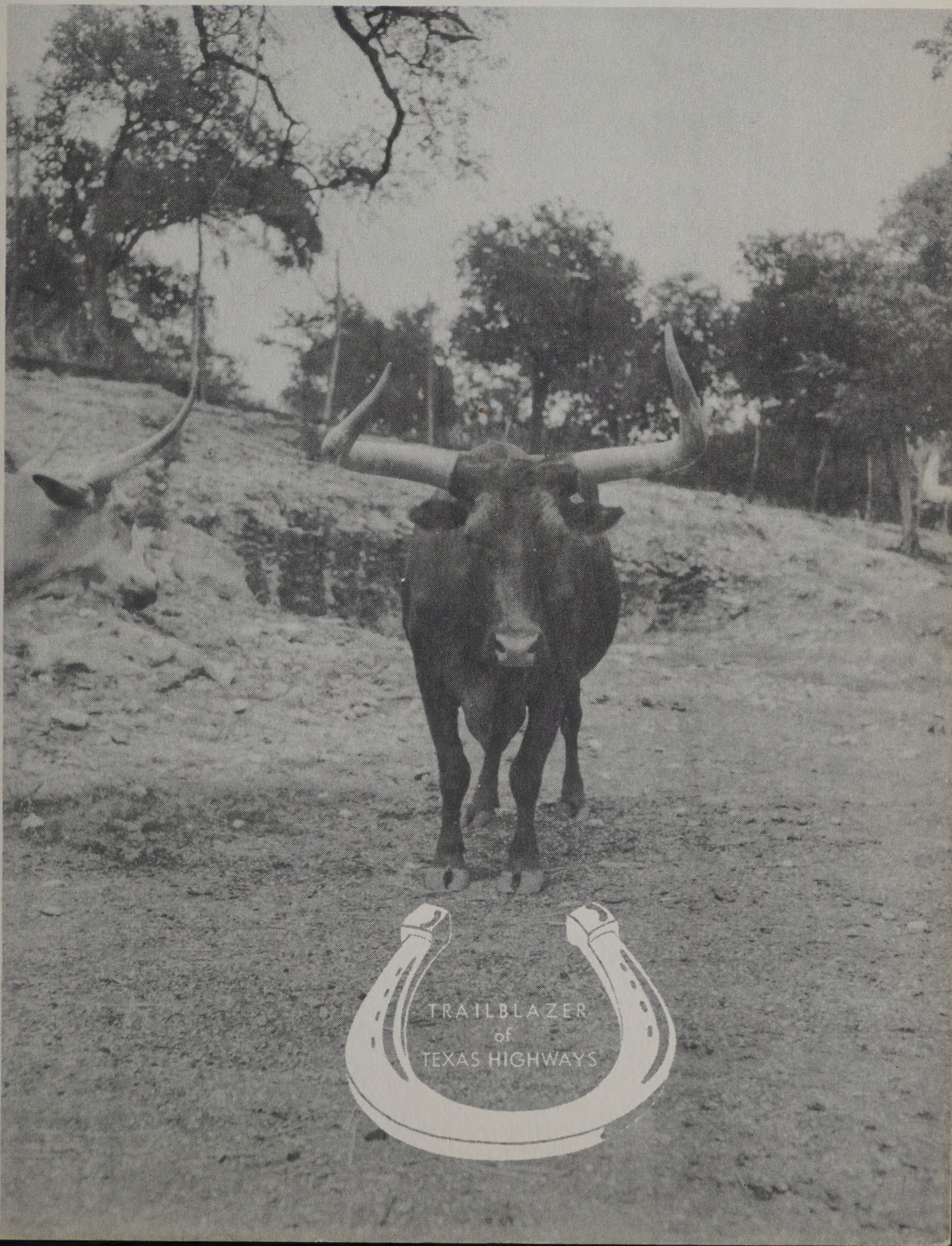
TEXAS HIGHWAY DEPARTMENT

Construction & Maintenance

BULLETIN No. 13

1952



Foreword

This bulletin is published for the purpose of presenting practical information applicable to current highway problems. These conclusions and data are not necessarily endorsed by the Highway Department nor are they to be construed as instructions. Employees are invited and urged to submit suggestions and relate experiences which would benefit those engaged in the construction and maintenance of highways.

Photographic services are available and other assistance may be obtained if desired in preparing material for submission. All material and comments should be directed to the Chief Engineer, Construction & Maintenance, Austin, Texas.

Published Jointly by

Maintenance Division	**D- 3**
Equipment & Procurement Division	**D- 4**
Construction Division	**D- 6**
Traffic Services Division	**D-16**

COMPILED AND EDITED
INFORMATION SECTION,
TRAFFIC SERVICES DIVISION
REPRODUCED
OPERATIONS DIVISION
TEXAS HIGHWAY DEPARTMENT
AUSTIN 14, TEXAS

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As We See It . . .

If you supervise the work of two or a hundred employees it would be well to keep the following thoughts in mind:

Emphasize "human relations" in developing the talents and skills of employees, and instill a sense of participation in the objectives we seek to accomplish. It is the idea of having people working with you rather than for you.

Constant evaluation of performance. This is the means of testing your leadership.

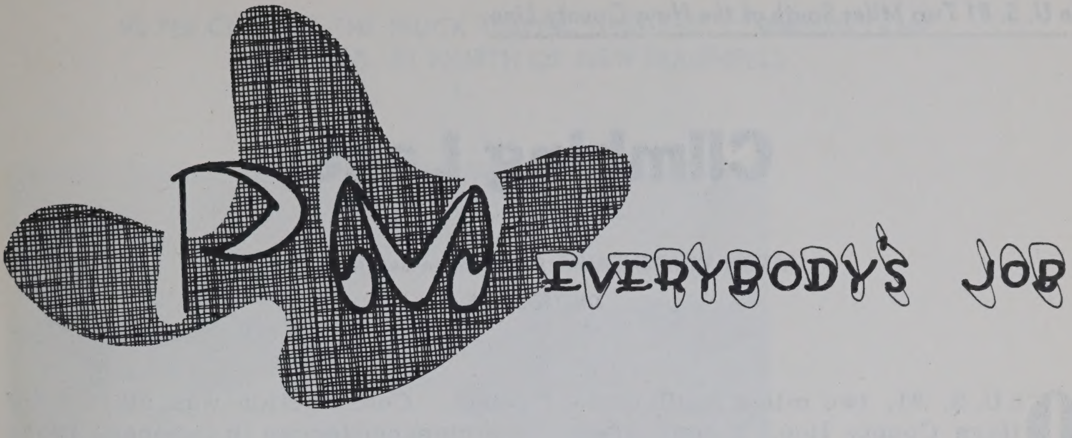
If you have to do with planning the work of the department, the following thoughts will be of great help:

Coordinating with those who have related interests. This bulletin is an example of coordination in action — the exchange of ideas for the betterment of your job.

Developing better ways of doing things at reduced costs. The continuing improvement in equipment and materials and their uses requires alertness to determine the extent to which those changes affect our operation.

It is our firm conviction that the full use of these practices and methods is the means of keeping in step with progress.

IT IS A PART OF THE EVERYDAY JOB!



PM EVERYBODY'S JOB

JOHN B. NATIONS, *Director*

EQUIPMENT AND PROCUREMENT DIVISION

Someone is always asking in a good natured way, "Who are you talking about in all this Preventive Maintenance stuff we read about?" Naturally the answer is, "Everyone that operates or drives a piece of highway equipment, be it daily or just occasionally."

One of the most common causes of trouble in the operation of any piece of equipment is a failure in the cooling system. The driver or operator himself can do much to guard against cooling system troubles. His three checks will determine the practicality of operation and warn of impending troubles. He will check the condition of the water daily and report any rusty condition or dirty solution so that remedy can be effected. He will watch the temperature gauge as a guide to efficient operation, and whenever the meter shows abnormal operating temperature, he will be concerned. And finally, he will watch the water level as an indication of trouble.

The variation of the water level is one of the first and best indications of improper cooling. Evaporation is a very small factor in water loss, and while some loss can be expected, the need for frequent refilling is one of the earliest indications of excess loss through boiling, overflow, or leakage. Tests have proved that 50 per cent of losses are due to leakage, while loss through overflow pipe from boiling and foaming account for much of the remainder. These are abnormal conditions and should be of as much concern to the driver or operator as loss of lubricating oil.

If water were as expensive as lubricating oil or gasoline, there would be little need for this article. However, until we realize that a great many road failures (as well as reduced engine life span) are a result of poor maintenance of the cooling system either directly or indirectly, such breakdowns will continue to be one of the biggest items of needless expense in our equipment operation. Water added to a low radiator may not appear to cost much in terms of dollars and cents, but the increased wear, lowered efficiency, and engine failures resulting from low and inadequate cooling systems send operating expense to formidable heights. The implications arising from a prematurely low water level should be indicative of impending failures. Far too many of us replace water and wait for serious engine damage before checking up on these conditions.

Climbing Lane

ALTON VORDENBAUM, *Construction Superintendent*
DISTRICT 15

On U. S. 81, two miles south of the Hays County line, a long grade on this two-lane highway slowed heavily-loaded trucks, causing other traffic to stack up behind them. This brought about a very undesirable condition, which was dangerous and created a considerable loss of time.

After studying the existing conditions it was decided to construct an additional traffic lane for southbound traffic at this hill, thus minimizing the hazard and loss of time by providing a slow-moving lane.

The length of the additional lane was to be 3,000 feet, with twelve inches of flexible base and one inch hot mix-cold laid asphaltic concrete surface. The existing pavement was 24 feet wide and was to be widened fourteen feet, making a total width of 38 feet, which would provide three ample lanes. Construction was started by maintenance forces in October, 1951, and the work was completed soon afterwards.

The traffic conditions have been studied several times since the completion of the project, and it was noted that the slow-moving traffic was using the additional lane extensively. The fast traffic also used it whenever it was not occupied by the slow vehicles.

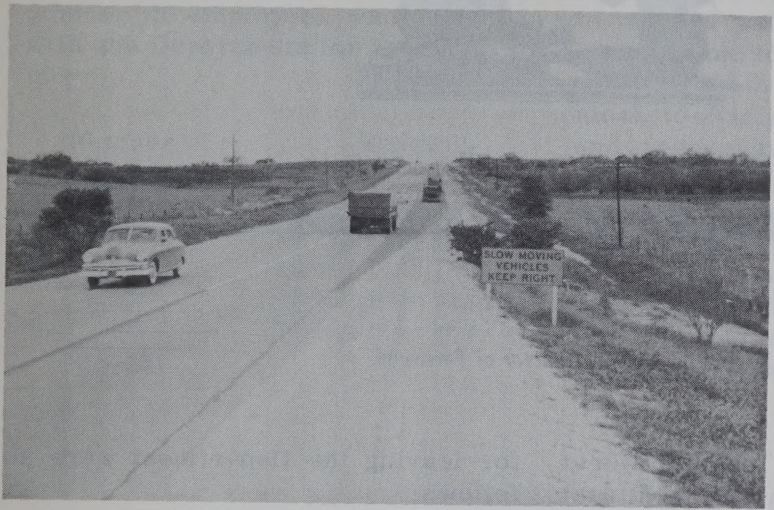
Total cost of the project amounted to $4, 361. 12, which was not excessive considering that a depth of twelve inches of flexible base was necessary due to subgrade conditions and heavy traffic.

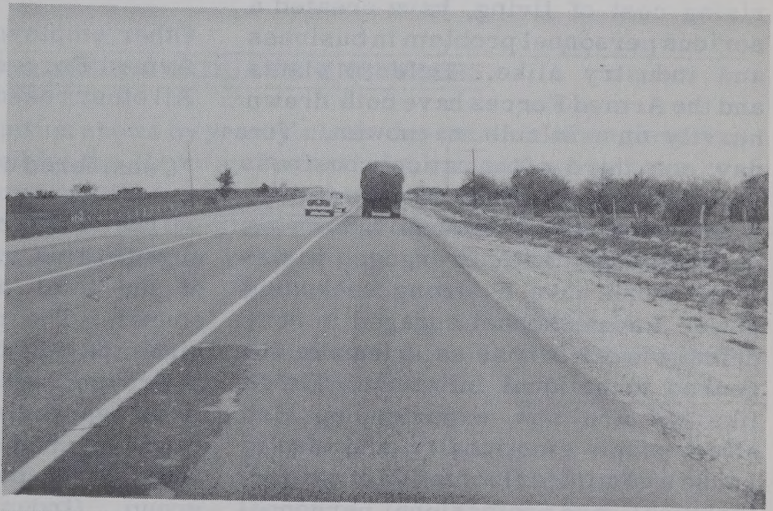
Conclusions were that the funds were well spent on this work, and that the value of the additional traffic lane has been definitely established.

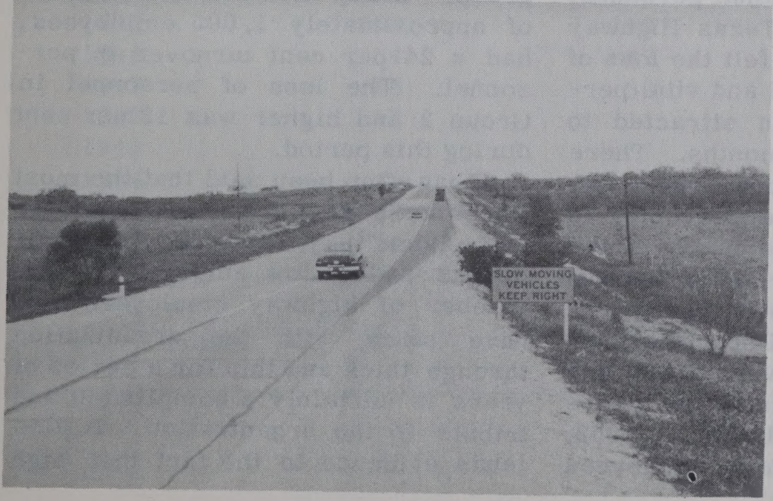
A material reduction in travel time resulting from this extra lane is reported from "before" and "after" studies by Traffic Services, and from vehicle classification studies by Highway Planning Survey. Vehicles which are preceded by two or more vehicles when they approach the grade average about 25 percent savings in travel time. With heavier traffic, it is believed that the time advantage would be even more apparent.

An AASHO committee has recently reported that climbing lanes are demonstrating their value in improving traffic flow and safety, and their more extensive use in the future seems certain.

93 PER CENT OF THE TRUCK TRAFFIC USES THIS CLIMBING LANE ON U.S. 81 NORTH OF NEW BRAUNFELS







Personnel Turnover

H. L. ARNO, *Director of Personnel*

The effects of the present world crisis, coupled with the continual rising cost of living, have created a serious personnel problem in business and industry alike. Defense plants and the Armed Forces have both drawn heavily on available manpower. Today, one-third of the nation's business stems from defense. The attractive wages offered by defense industries or other organizations engaged in defense work have a strong beckoning power for personnel engaged in non-defense work whose salaries are not geared to national inflation. Times like we are now experiencing also affect people emotionally, and tend to cause a continual fluctuation of skilled, technical, and professional personnel in every field. The Texas Highway Department has keenly felt the loss of many of its experienced and vital personnel who have been attracted to other jobs in recent months. There are many instances today where one highway employee is endeavoring to perform the work of two or more men due to the critical shortage of certain technical or administrative personnel.

The Texas Highway Department had a 31 per cent turnover in monthly salaried employees during the twelve month period ending March 31, 1952. The reasons given by these employees for leaving the Department were as follows:

Other employment	501	38%
Armed Forces	127	10%
All other reasons*	676	52%
	1,304	

*Considered unavoidable separations

The 501 employees who left the organization represent 12 per cent of the total monthly salaried personnel. The majority left to accept higher paying jobs with private firms. In Group A, which is composed largely of approximately 1,000 clerical workers, had 808 resignations which equaled 80 per cent of this entire group. Group 1, which is composed of approximately 1,000 employees, had a 24 per cent turnover in personnel. The loss of personnel in Group 2 and higher was 12 per cent during this period.

It has often been said that the most important aspect of any job is not the "take home" pay, but the working conditions and fellow employees. The number of highway employees who have stuck with the organization through thick and thin for a period of years is certainly a compliment and tribute to the organization. It also lends evidence to the fact that high salaries are not necessarily the greatest inducement for accepting a job and remaining with an organization. Listed below is a breakdown of the number of employees who have been with the Department for ten years or more:

Number of Employees	Years of Service
75	30 or more
281	25 but less than 30
860	20 but less than 25
956	15 but less than 20
843	10 but less than 15
3, 015	

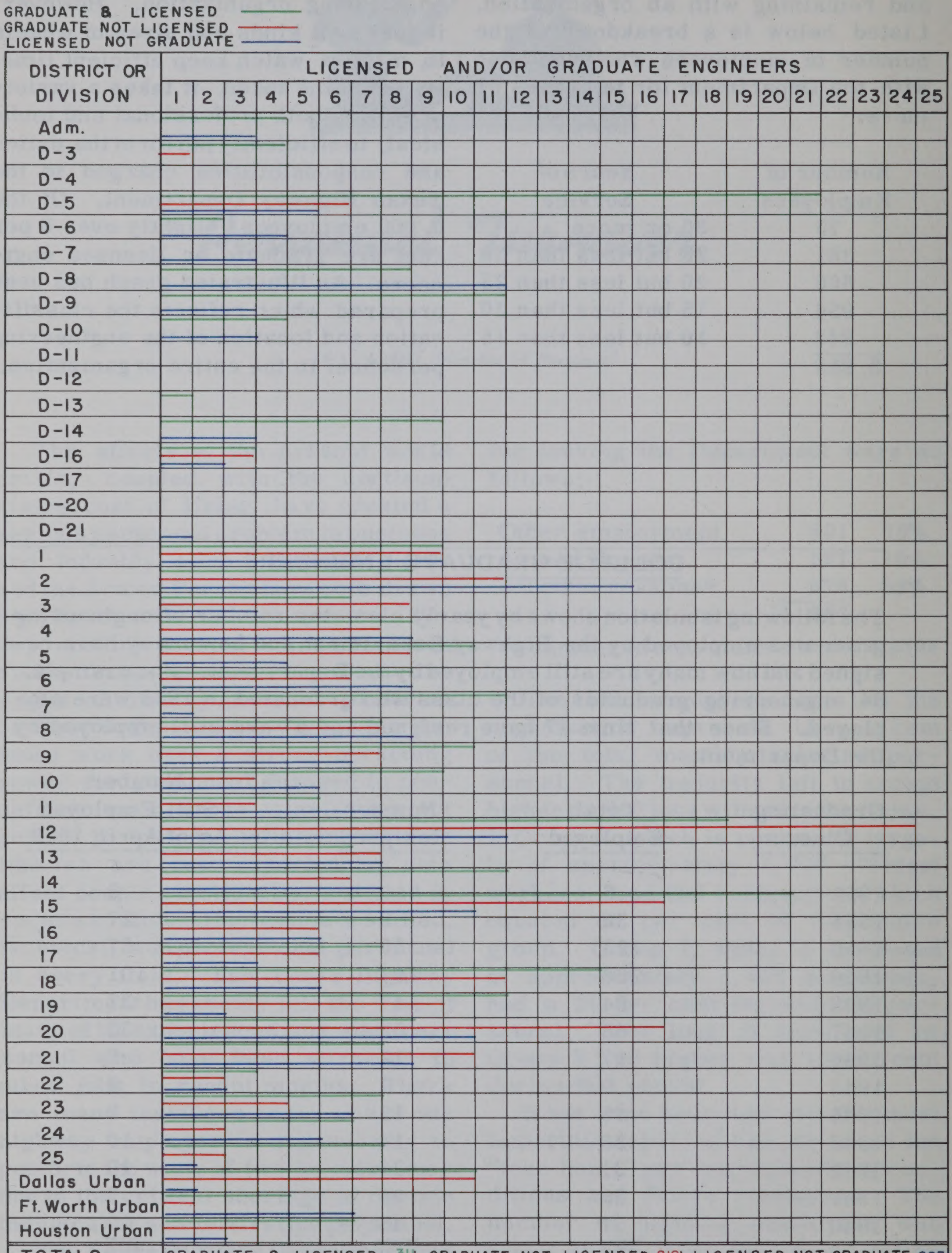
The Texas Highway Department, by nature, is basically a technical or engineering organization. However, it takes all kinds and sizes of wheels to make a watch keep efficient time. By the same token, it takes a variety of skills, both professional and technical, to efficiently perform the duties and responsibilities charged to the Texas Highway Department. Of the 9, 000 employees, slightly over 8 per cent are graduate or licensed engineers. An illustrated graph has been prepared which reflects the classification and location of the engineering personnel in the entire organization.

COLLEGE GRADUATE ENGINEERS

The following tabulation shows by yearly class the number of engineering graduates employed by the Highway Department and how many have resigned and how many are still employed by the Department. For example, 84 engineering graduates of the class who graduated in 1948 were employed. Since that time 47 have resigned and 37 are still employed by the Department.

Graduating Class	Total Employed	Number Resigned	Number Still Employed As of April, 1952
1952	6	0	6
1951	36	9	27
1950	123	56	67
1949	208	107	101
1948	84	47	37
1947	88	53	35
1946	17	11	6
1945	9	7	2
1944	15	12	3
1943	28	18	10
1942	31	21	10
1941	35	26	9
1940	57	45	12
Totals	737	412	325

HIGHWAY ENGINEERING PERSONNEL



TOTALS GRADUATE & LICENSED 311; GRADUATE NOT LICENSED 218; LICENSED NOT GRADUATE 203

DISTRICT REPORTERS

J. A. WALLER
Chief Engineer Construction and Maintenance

The following Construction and Maintenance Bulletin Reporters have been assigned in the Districts. These men will be responsible for forwarding material to the Austin office for use in the Construction and Maintenance Bulletin.

Any reader who has an idea for an article should get in touch with the reporter in his District. The article can be assigned to the person most able to furnish the information, or it can be written by the person suggesting the article, or by the reporter, himself.

The paper can be prepared in any manner or style for submission and this office can prepare it properly for reproduction in the Bulletin. There are probably many items that would be of interest to Bulletin readers which are not written up because the would-be writer feels that he could not prepare an article correctly. Anyone who feels that he has an idea or story should discuss the matter with his reporter and make a special effort to prepare the material for the Bulletin. Representatives of the Austin office will be glad to make pictures or lend assistance in any way to help in the preparation of articles.

DISTRICT	REPORTERS
1	J. W. Cravens, District Maintenance Engineer
2	W. W. Potter, Assistant District Engineer
3	L. E. Morris, Assistant District Engineer
4	Charles W. Smith, Assistant District Engineer
5	J. D. Willson, Senior Maintenance Superintendent
6	Paul H. Coleman, Assistant District Engineer
7	L. K. Willis, Assistant District Engineer
8	George J. Smith, Assistant District Engineer
9	J. A. Snell, Assistant District Engineer
10	I. H. Crutcher Jr., District Maintenance Engineer
11	J. M. York, Assistant District Engineer
12	W. E. Carmichael, District Construction Engineer
13	H. C. Veazey, Assistant District Engineer Zay Johnson, District Maintenance Engineer
14	H. C. Carter, District Construction Engineer
15	Alton Vordenbaum, Construction Superintendent
16	T. O. Foster Jr., Assistant District Engineer
17	D. L. Hogan, District Maintenance Engineer
18	Grover Green, District Maintenance Engineer
19	Gilbert A. Youngs, Assistant District Engineer
20	E. D. Parmer, Assistant District Engineer
21	S. R. Busby, Assistant District Engineer
22	C. N. Parsons, Assistant District Engineer
23	E. M. Pritchard, Assistant District Engineer
24	Max W. Moore, Assistant District Engineer
25	Palmer Massey, District Engineer

Cold Poured Sealing Compound for Maintenance of Concrete Pavement

I. H. CRUTCHER JR., *District Maintenance Engineer*
DISTRICT 10

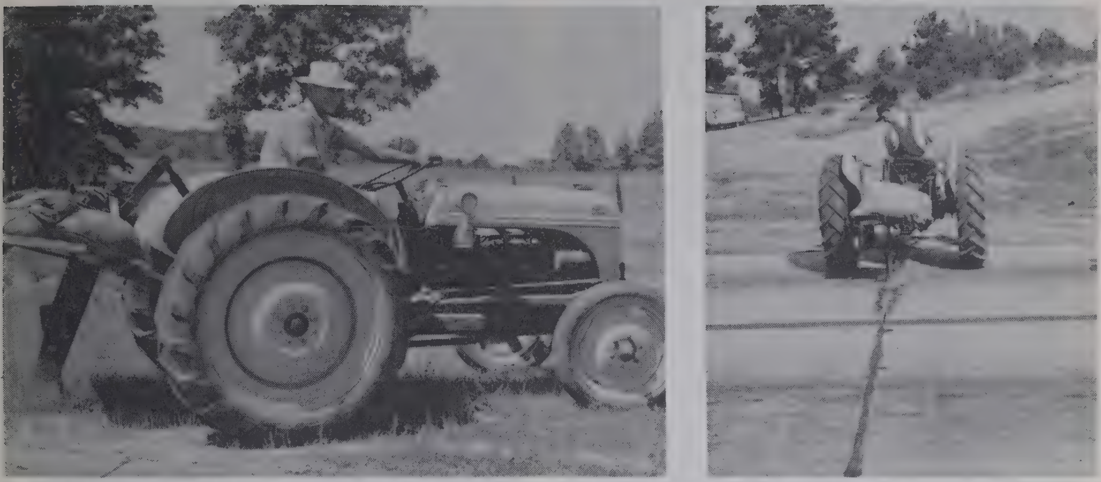
We believe that everyone struggling with the problem of maintaining concrete pavements under present traffic loads agrees that if the joints and cracks could be effectively sealed against the infiltration of water into the subgrade soils, the life of the pavement would be materially increased and maintenance costs reduced.

When low penetration asphalts are used for sealing, the material cracks with the contraction of the pavement in cold weather. This allows water to enter. About four years ago, in this District, we started using a hot poured rubber compound for joint sealing. This material gave good results when properly applied and when the joint was properly cleaned to provide a clean face to which the compound could adhere. There were two disadvantages in using this material. The heating process was slow, and the tolerance between the minimum temperature at which it could be applied and the maximum to which it could be heated without damaging it was small.

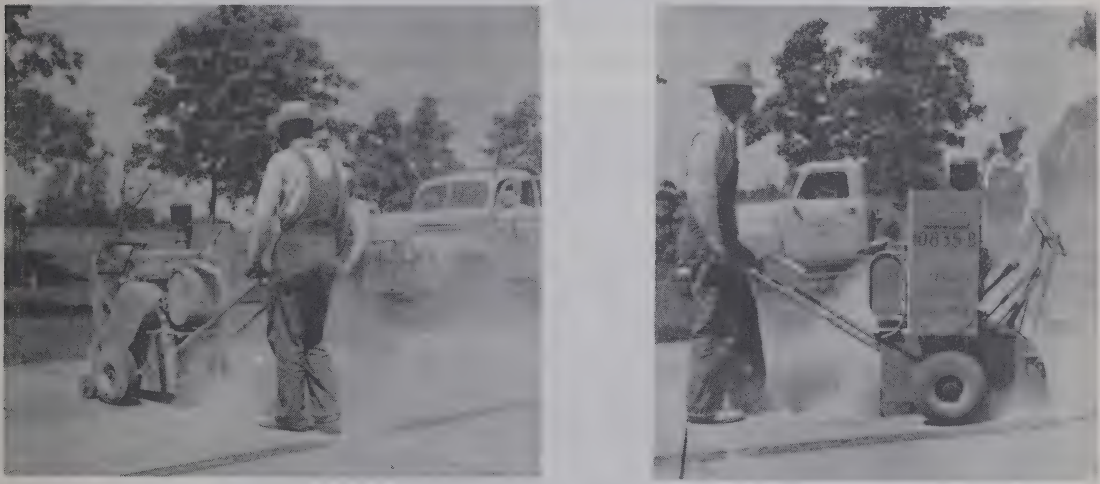
Last fall we decided to experiment with a cold poured sealing compound manufactured by the Presstite Engineering Company under the name of "Enamelite Joint Sealer #88." We found that the Fort Worth District had used some of this material the year before, and Mr. Finley advised us that, although the material had only been in place a few months, he was pleased with the results up to date. We bought a trial order of 20,000 pounds and after using it, bought two additional orders of 60,000 pounds each. The first material we used has now been in place only nine months, so that we are in no position as yet to know what its effective life will be. So far, we are well pleased with the results. We were convinced that it was essential to provide a clean surface to insure bond between the concrete and the sealing compound.

The accompanying pictures show the step by step procedure.

Cost of the material was $0.105 in car load lots, and $0.115 in L.C.L. lots. Labor and equipment costs of cleaning and sealing joints were approximately $0.075 per pound. The maximum amount used was 3,000 pounds per mile on a concrete pavement 24 feet wide with contraction joints at 20 foot intervals and expansion joints at 100 foot intervals.

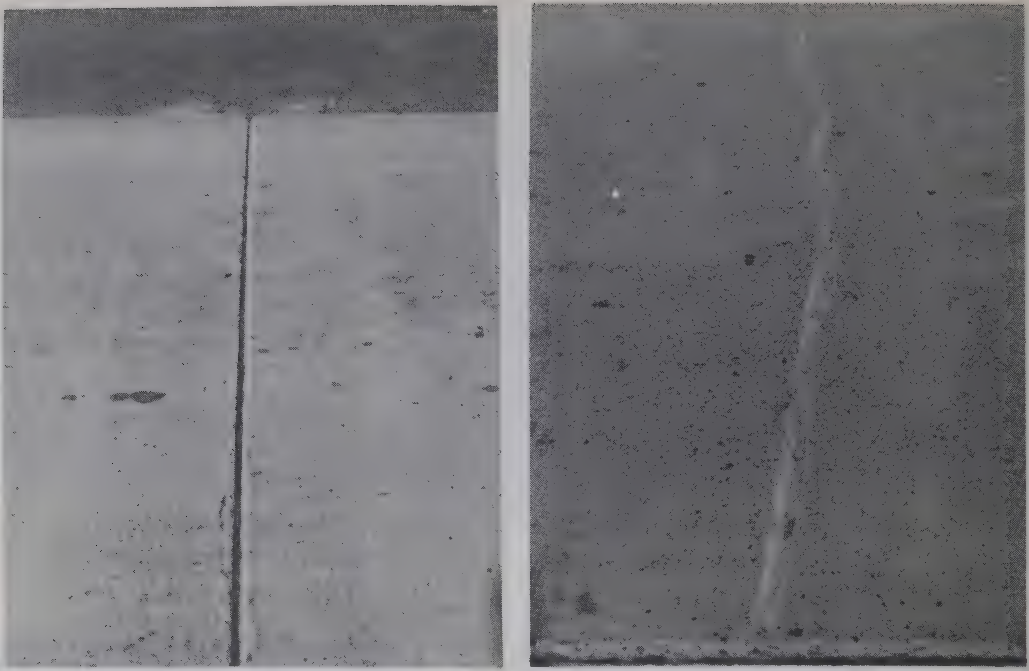


Old joint material is removed with this plow, designed by T.A. McBride, District Equipment Supervisor. The rig consists of a plow made from a scarifier tooth mounted on a Ford tractor with hydraulic controls.

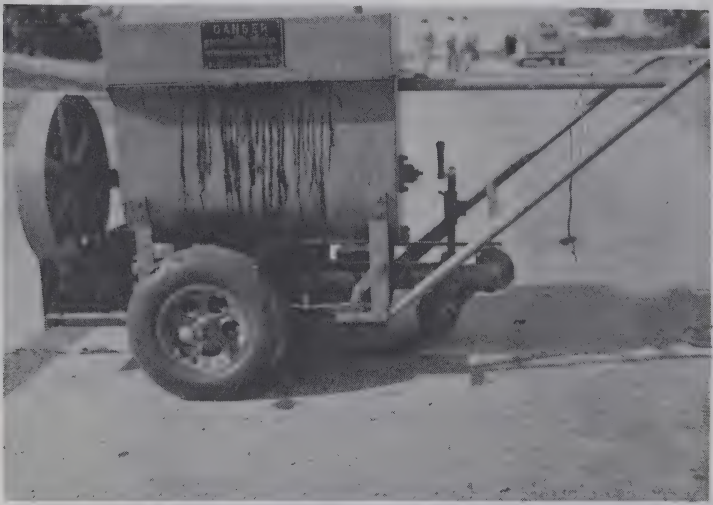


Joints and cracks are routed out with a Tennant grooving machine.

Compressed air is used to blow all dust and dirt from the joints.

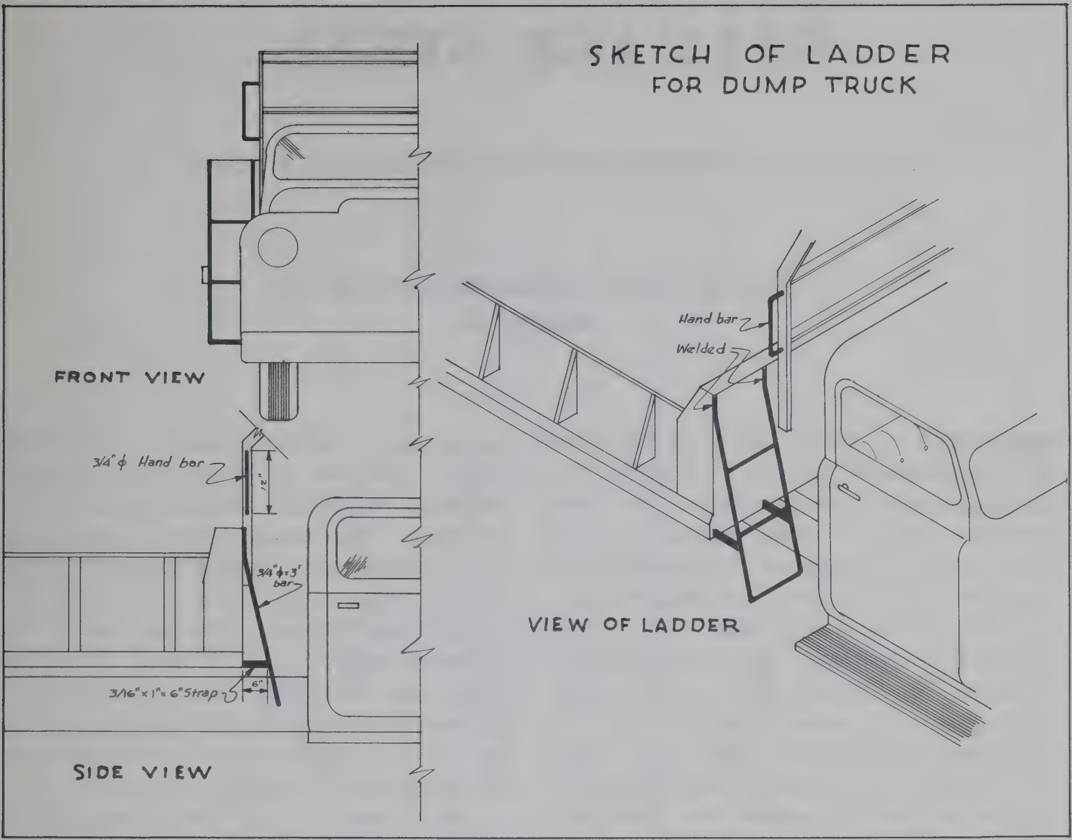


Ready for sealing, the clean concrete faces of the joints and cracks insure good bond.



The material is forced under pressure through an extruding nozzle which rides in the joint. The machine is furnished by the manufacturer.

Paper tape is applied after pouring to protect the material from traffic until it sets.



LADDER FOR DUMP TRUCK

JIM DOUGLAS, District Engineer

DISTRICT 12

Details of a ladder mounted on the front of our dump trucks to assist our men to climb into the dump bed from the running board are shown in the sketch.

The ladders are made up in our welding shop and consist of three-fourths inch round bar bent with two additional cross pieces to form three steps on twelve-inch centers. The three-fourths-inch round bar is welded to the top of dump bed, bent out slightly and attached to the bottom of the dump bed by welding two pieces of three-sixteenths-inch by one-inch strap iron about six inches long. The bottom step must be checked so that it will clear the cab of the truck when the dump bed is raised.

There is a hand hold welded to the "headache rack" made out of three-fourths inch-round bar stock. This is welded onto our angle iron to further assist the men climbing into the dump bed.

This ladder is very simple and can be made out of odd stock usually found around our welding shops.

SALVAGE STEEL

USED ON NEW BRIDGES AND FOR LAND SERVICE ROADS

Fred W. Clark Jr., *Senior Resident Engineer*
District 22

Through a joint effort within the Department in the planning, design, and construction of land service roads, many miles of high quality farm to market roads have been constructed at a low cost per mile.

During the early part of 1951 a Federal Regulation, governing the use of steel, presented another problem in planning all new construction. To an already limited design of bridges for land service roads, the problem of staying within job quotas for steel was added.

In the past years it has been a practice to use lightweight salvage structural steel from bridges in places such as roadside parks, equipment racks, etc., but certainly not to reuse it in new bridges. In some instances when whole bridges were removed and given to the county, they would appear on new farm to market roads to be removed again. For this reason and the limited load-carrying capacities of these old bridges, it was desirable to destroy them entirely.

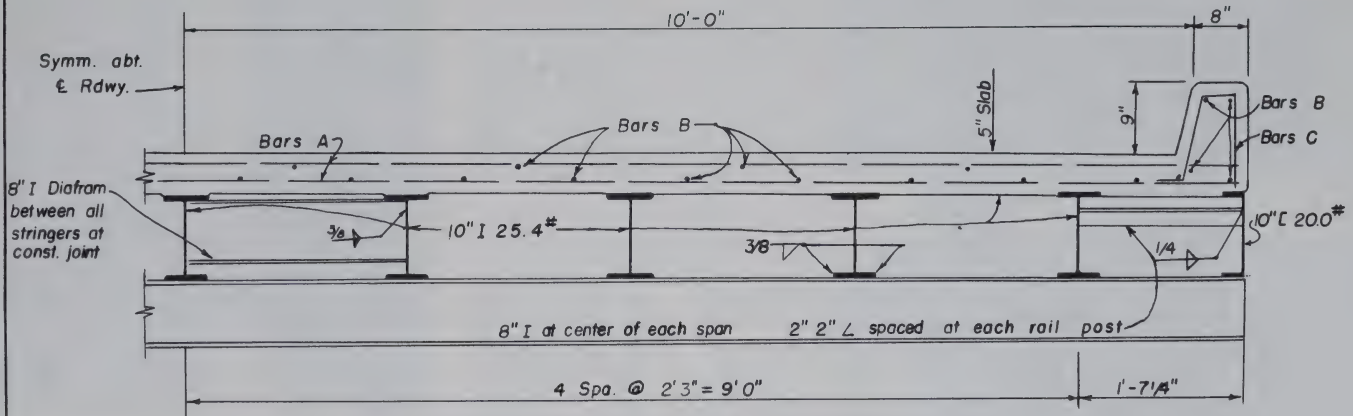
In order to develop a feasible and economical solution to steel quotas in Zavala County, it was decided to reconsider and "earmark" available structural steel salvaged to be reused on new bridges for land service roads. One of the "salvage bridges" is shown in Picture 1.

On Project V 1279-1-3, Farm to Market Highway 1025, Zavala County, two small bridges of 80 feet and 40 feet in length were required. Structural steel available was primarily 10-inch I-Beams in thirty-foot lengths, most of which had considerable deformation. The design finally proposed to be used was 20-foot spans between bents with an 80-foot and a 40-foot continuous 10-inch I-Beam Unit. The I-Beam spacing is 2 feet, 3 inches apart for an H-10 design loading with a roadway width of 20 feet provided by a 5-inch reinforced concrete slab, as shown by sketch in Figure 1.

In order to further economize it was decided to use a bent supported by three columns of 10-inch I-Beams placed in spread footings, as shown in Picture 2. Consideration was given to driving the 10-inch I-Beams as piling but was decided against due to the deformation of the beams to be used and the type of foundation soil encountered. Drilled shaft was too costly besides using additional reinforcing steel.

All of the structural steel in both the columns and superstructure was lumped together under a special bid item "Installing Structural Steel" with the unit being "Pounds." This Special Specification included Standard Specification Items 406, 407, and 408, with a provision that the structural steel would be furnished free of charge to the contractor.

The railing for the structure was under the bid item of "Railing" Item 422, per linear foot, with Special Provision that the structural steel members would be furnished free of



TYPICAL HALF SECTION

FIGURE I

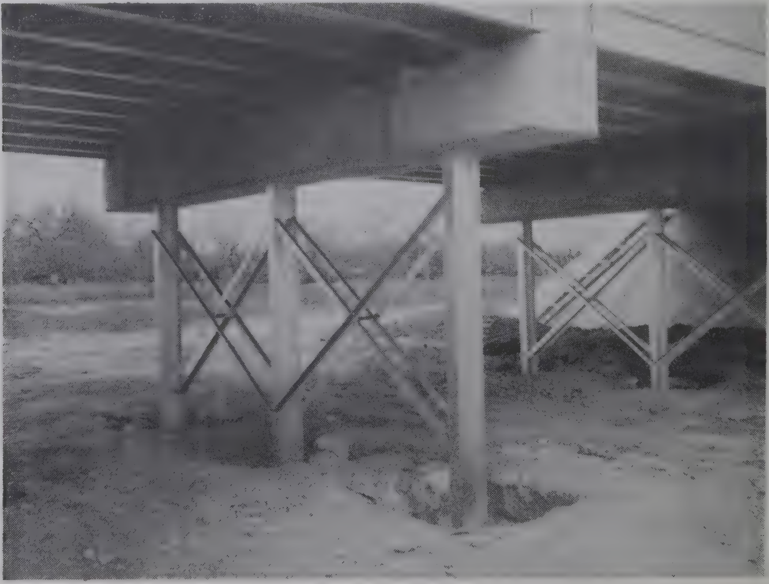
Old Espantosa Bridge,
F.M. 395.

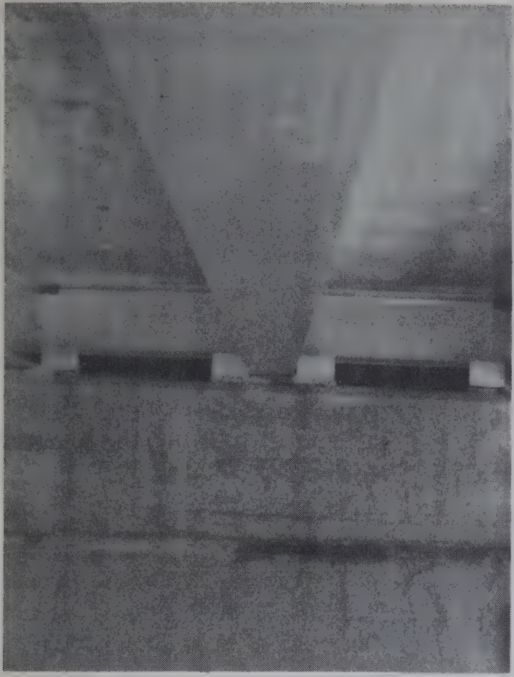
charge to the contractor.

The contract for the project was let on September 12, 1951, and Thomas and Ratliff, General Contractors, secured the contract bidding six cents per pound for "Installing Structural Steel" and three dollars per linear foot for "Railing." Bridge work began November 1, 1951, and was completed January 30, 1952. No particular difficulties were experienced during construction as the contractor had very competent bridge personnel.

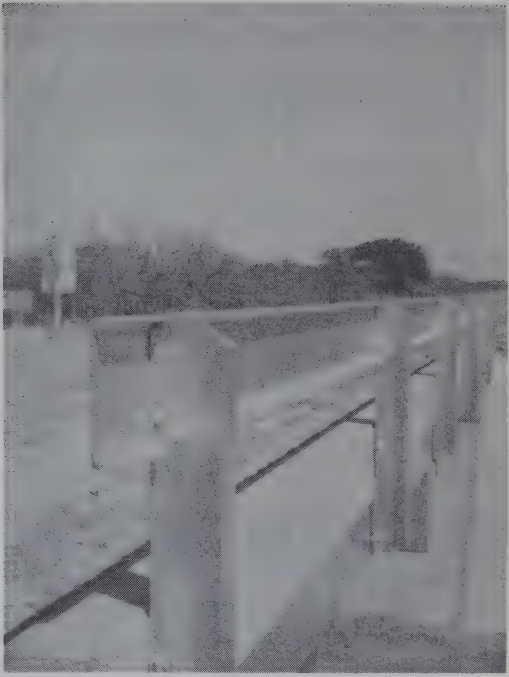
Of special interest was the welding of the stringers and diaphragms. Because of the narrow thickness of the web of the I-Beams, the joints were beveled on one side only, with 60 degrees the included angle, and a root face of 1/16 inch and a root opening of slightly more than 1/16 inch. Throughout the entire welding the Fleetwood 5 electrodes were used which, being the E6010 welding rod, is normal practice. The stringers were welded together on the ground up

Columns and bents,
West Tortugas Bridge.





Shoe and plate on abutment
West Tortugas Bridge



Rail post
East Tortugas Bridge

to lengths of 55 feet and then placed on the bents so that only one weld per stringer was required in mid-air. It is particularly noteworthy that the shoes were left off of the stringers until the entire stringer unit including the diaphragms had been fabricated. This was done to facilitate alignment without undue stress on the shoes.

Picture 3 shows the shoes and plates which were fabricated on the job. The shoes were simply short sections of 10-inch Channel with a notch cut in the flange allowing the flange of the stringer to rest on the web of the channel shoe. Similarly, the plates were 10-inch Channels with the flanges removed. By careful work by experienced welders, cutting and fabrication can be done neatly in the field. This was further evidenced by bevels cut on 6-inch I-Beams used for railing post as shown in Picture 4.

The deformation that existed in the salvaged 10-inch I-Beam was extremely bad in some cases, and several short sections had to be used. By cutting old Beams approximately in the center, however, two relatively straight beams of nominal length were obtained. Long beams were straightened by bending them cold with rigid support and hydraulic jack. Contraction by heat was used only in the more critical or stubborn cases. Following the straightening of a bend, the surface of the metal was carefully inspected for evidence of fracture.

As is the case of all welding of steel, it is very important that close inspection be given to each individual weld. The most important consideration, of course, is the qualification test given to the welder to do the work on the project. In addition to the certification furnished by the commercial testing laboratory, a soundness weld test may be given at any time that a welder's work becomes sloppy. On this project the welder's work was of excellent quality.

Compared to small bridges built in

this area, using Series Standards FS-8-20-25 Concrete Slab Span with either steel or concrete piling, it was found that the salvage I-Beam bridges were approximately $20 per linear foot cheaper than the FS bridges. Exclusive of engineering, the comparative cost was approximately $77 and $97 per linear foot for structures providing a 20-foot roadway. In this way the old steel was put back into use with a net saving of $2, 400 and above all only a minimum amount of new steel was used. Reinforcing steel actually saved was approximately 11, 880 pounds, plus either 5, 105 pounds of reinforcing steel for concrete piling or 27, 720 pounds of steel piling, depending on the design.

By use of salvage steel, new bridges of concrete and steel can be built for land service roads instead of resorting to part wooden structures of temporary or short-lived nature, which in most cases have to be replaced or widened at additional cost later on.

The two completed bridges across West Tortugas Creek and East Tortugas Creek on Farm to Market Highway 1025 in Zavala County are shown in Pictures 5 and 6.

General view,
West Tortugas Bridge

General view,
East Tortugas Bridge.

BRENHAM ORIGIN-DESTINATION SURVEY

J. E. WRIGHT, Assistant Traffic Manager
HIGHWAY PLANNING SURVEY

One function of the Traffic Section of the Highway Planning Survey is to make studies of the flow of traffic into and through towns and cities when basic data are needed for a study of route changes, intersection design, etc. Normally these data are obtained by an Origin - Destination Survey. The Planning Survey has made some 50 External Origin and Destination Surveys, one complete External and Internal Survey, three partial Internals and two Parking Surveys.

On April 2, 1952, the Planning Survey was requested to make a study of traffic entering and passing through Brenham. The request came to the Planning Survey from the District Engineer of District 17 and was prompted by the Brenham Chamber of Commerce who asked for by-pass routes around the entire town. It was claimed that large numbers of truck combinations were causing extreme congestion on highway routes through the business district of Brenham. This congestion was intensified by narrow streets and numerous turns on the present routes through town.

The information desired indicated the necessity of an External Origin - Destination Survey, which was scheduled and conducted from 10 A. M. to 6 P. M. on April 24, 1952.

The primary purpose of an Origin and Destination Survey is to secure factual data regarding travel habits and desires of people using the existing facilities.

The procedure used in this type of survey is to stop all vehicles leaving the city by various highways and interview the drivers. Information was obtained concerning the type of vehicle, origin and destination of the trip, highway of entry or zone of origin within the city, zone in which stops were made, and reasons for stopping. While the survey was in progress, volume counts with hourly recording automatic traffic recorders were made on each highway leading into Brenham. At each interview station manual classification counts of vehicles moving in each direction were made. Volume counts were also made on important streets and highway routes through the city. Permanently installed automatic traffic recorders in the Brenham area were used to expand survey data to 24-hour annual averages.

Of particular interest in the Brenham survey was the number and route of tractor-truck semi-trailer units passing through Brenham. For this reason special 24-hour classification counts were made on U. S. 290 west and on S. H. 36 north. These manual counts in conjunction with machine counts made during the week of the survey and control information from permanently installed automatic traffic recorders in the Brenham area made it possible to expand the origin-destination information on all types of vehicles to 24-hour annual average figures.

The Brenham Chamber of Commerce obtained students from Blinn College and from Brenham High School for interviewers and manual recorders at each station. The Planning

Survey furnished supervisory personnel for the project. The Department of Public Safety furnished Highway Patrolmen who assisted in the safe and efficient operation of the heavier volume stations.

The college and high school students used on the job did excellent work and seemed happy to have the opportunity to assist in the project. The Chamber of Commerce arranged for a fried chicken lunch to be served to all personnel on the job.

Field data obtained in the survey were brought immediately to the Austin office, expanded, and summarized.

For the purpose of analysis, the city was divided into five zones. The boundaries of these zones were established to represent as closely as possible areas of similar use characteristics.

Traffic represented in this study is divided into two classifications. "Local" traffic includes all vehicles originating in, destined for, or making essential stops in Brenham. "Through" traffic includes all vehicles passing through Brenham without stopping and those that made non-essential stops.

Stops made for the purpose of transacting business, to trade, to visit friends, or to secure lodging are considered essential stops. Non-essential stops are those stops made to purchase gasoline, oil, cold drinks, or to eat. Vehicles making such stops are combined with those making no stops, since it is believed that adequate facilities to care for their needs would be available on any route.

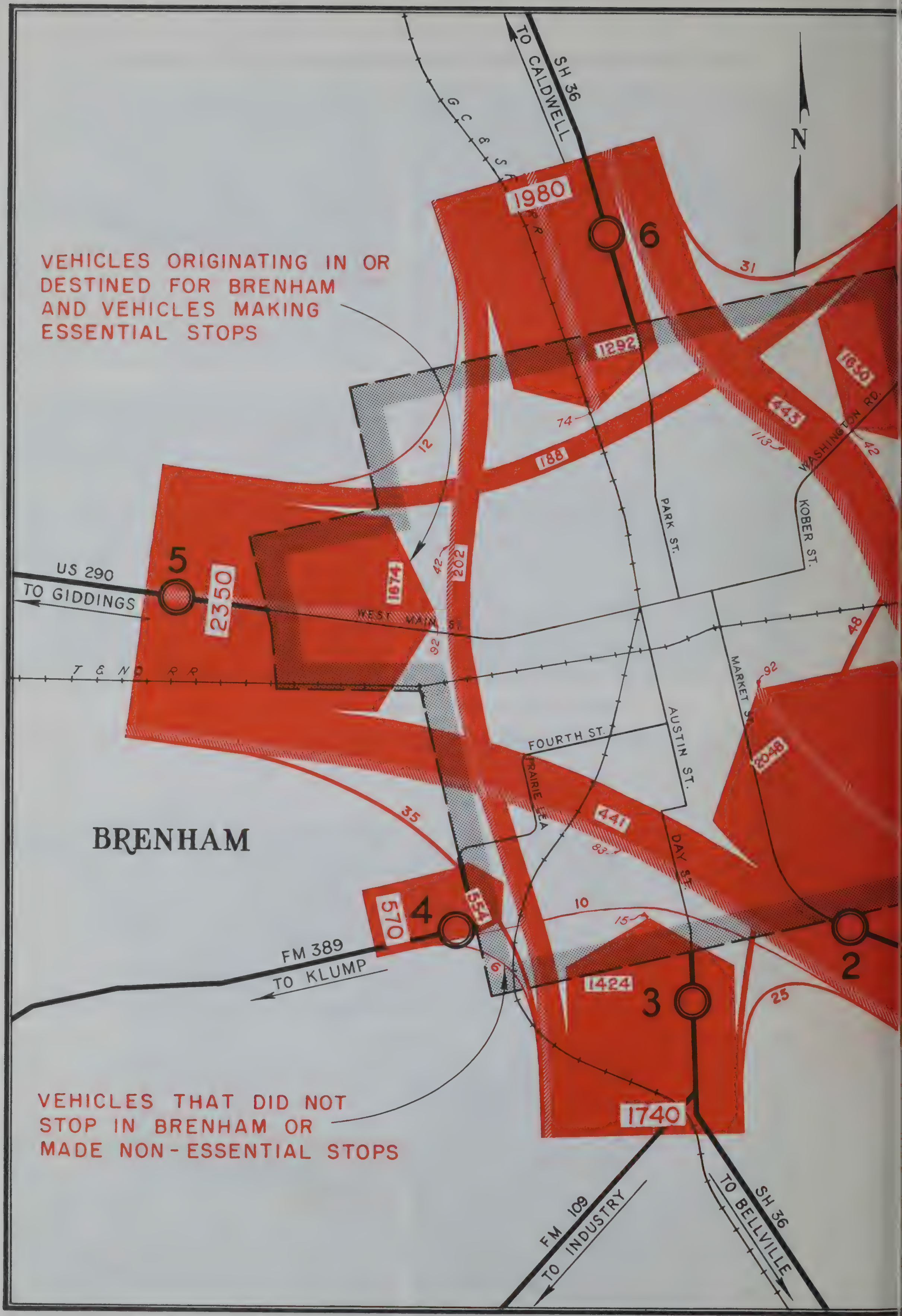
Tables and charts showing the results of these data have been prepared and published in a report titled, "Brenham Origin and Destination Survey." This report presents a graphic analysis of the movement of traffic into and through the City of Brenham, in such a manner that the data can be used as a basis for making sound decisions in determining the need of by-pass routes or other improvements that will best serve traffic needs.

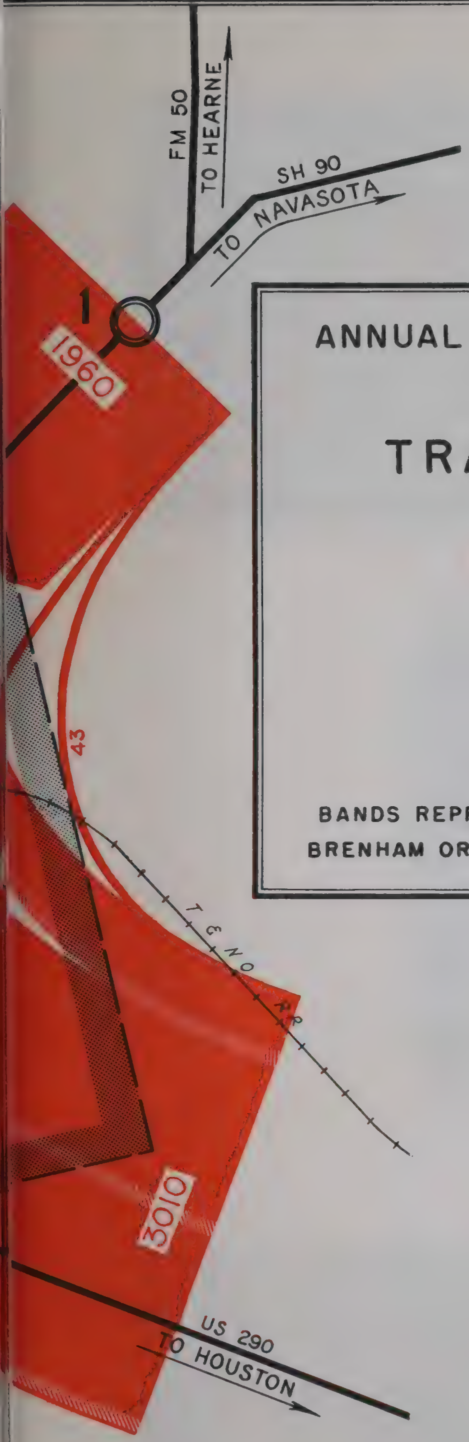
The diagram shows by scaled bands the total traffic movement into and through Brenham from the interview stations. Shown also is the movement of combinations (tractor-truck semi-trailers) through each station.

Left to right - J.E. Wright, Assistant Traffic Manager, H.P.S.; Bert Hedick, Resident Engineer, Brenham; W.B. Blincoe, J.J. Carmichall, Walter Reaves, Charles Davis, R.S. Dodson, L.C. Boswell, and W.D. Redmond, all H.P.S. supervisory personnel.

Truck "Combinations" of various types were numerous on U.S. 290 and S.H. 36.

Other types of vehicles encountered at all stations.


TO CALDWELL
SH 36
G C & S F R R
N
1980
6
31
VEHICLES ORIGINATING IN OR DESTINED FOR BRENHAM AND VEHICLES MAKING ESSENTIAL STOPS
1292
1630
443
WASHINGTON RD.
42
113
74
12
188
PARK ST.
KOBER ST.
5
US 290
TO GIDDINGS
2350
1674
42
202
WEST MAIN ST.
92
48
T & N O R R
MARKET ST.
92
2048
FOURTH ST.
AUSTIN ST.
PRAIRIE LEA
35
441
83
BRENHAM
DAY ST.
10
15
570
4
554
FM 389
TO KLUMP
6
1424
3
2
25
VEHICLES THAT DID NOT STOP IN BRENHAM OR MADE NON-ESSENTIAL STOPS
1740
FM 109
TO INDUSTRY
SH 36
TO BELLVILLE

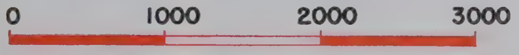


ANNUAL AVERAGE 24-HOUR TRAFFIC

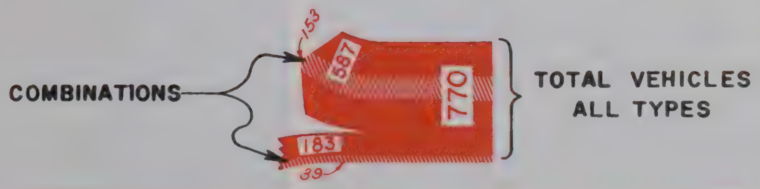
TOTAL
TRAFFIC MOVEMENTS
FROM
ALL STATIONS
INTO AND THROUGH
BRENHAM
FROM
EXTERNAL ROUTES

BANDS REPRESENT TRAFFIC MOVING IN BOTH DIRECTIONS
BRENHAM ORIGIN AND DESTINATION SURVEY - APRIL 24, 1952

TRAFFIC SCALE



VEHICLES



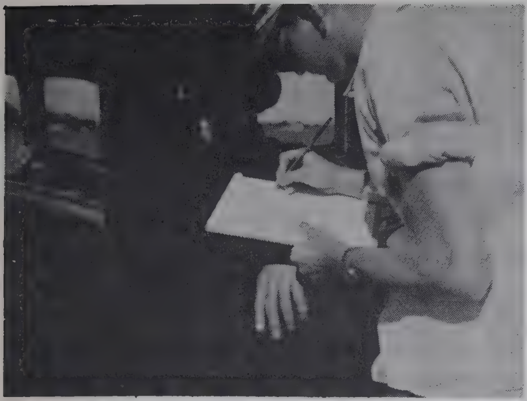
COMBINATIONS OF LESS THAN 10 PER DAY NOT SHOWN

Cars from many other states were interviewed.

Close-up of form used by interviewer.

Inspecting an Automatic Traffic Recorder.

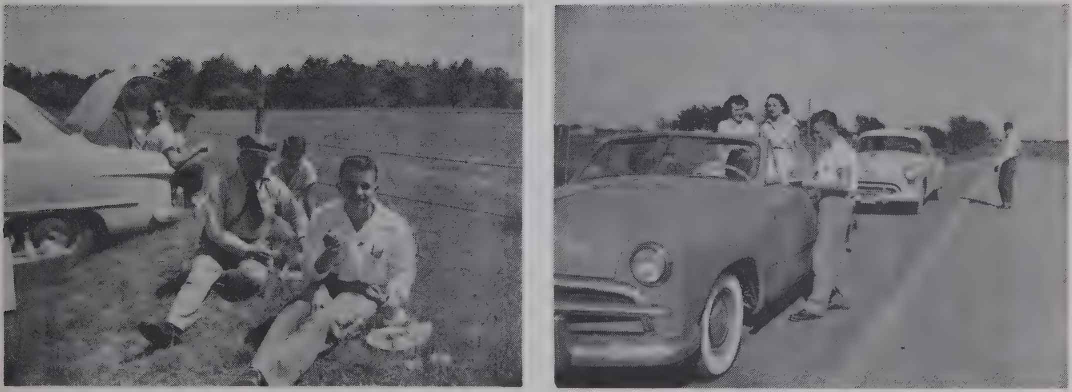
Station 2 on U.S. 290, east of Brenham.



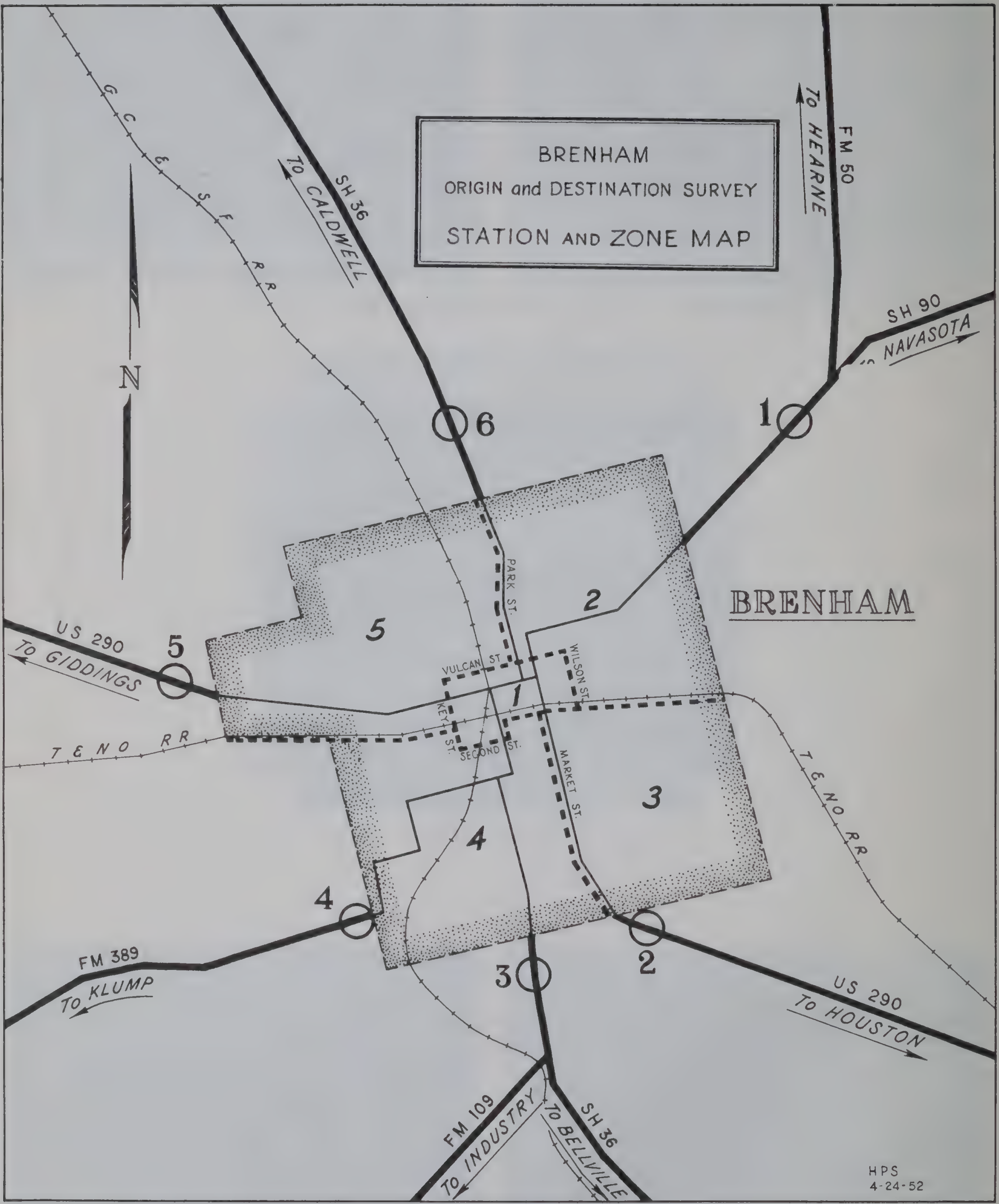
Interviewer and interviewee, Station 5 on U.S. 290 west of Brenham.

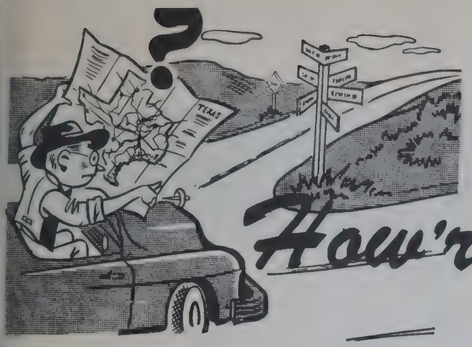
Interviewers from Blinn College receiving instructions.

Station 3 on S.H. 36 south of Brenham.



It wasn't all hard work.


BRENHAM
ORIGIN and DESTINATION SURVEY
STATION AND ZONE MAP
N
G C & S F RR
SH 36
To CALDWELL
To HEARNE
FM 50
SH 90
To NAVASOTA
BRENHAM
US 290
To GIDDINGS
T & N O RR
PARK ST.
VULCAN ST.
WILSON ST.
KEY ST.
SECOND ST.
MARKET ST.
1
2
3
4
5
6
FM 389
To KLUMP
US 290
To HOUSTON
FM 109
To INDUSTRY
SH 36
To BELLVILLE
HPS
4-24-52



Extracted from Highway Information Bureau Attendant's Training Manual

How're Your Directions?

Practically everyone at some time or the other has turned to some official or other individual to seek directions and travel guidance, only to find that upon receiving the information he was more confused than ever. Funny as it may seem, more people are capable of following directions than of giving them. Undoubtedly a great number of highway employees answer daily questions from motorists seeking travel guidance. By observing and applying the following suggested practices, you can easily cultivate the ability to give clear, concise directions and thus be of greater service to our customers, the motoring public:

1. Smile - it does the most and costs the least. There is no substitute for courtesy.

2. Listen to the question carefully.

3. Repeat the name of the place you have been asked about. This reduces misunderstanding and gives the inquirer confidence in you and your directions.

4. Take a second or two to compose your thoughts before answering. This will enable you to give a brief but accurate answer.

5. In giving directions, use the terms of "right" or "left" rather than "north" or "south." Most people in a strange area do not know which is north or south, but they all know which is right or left.

6. Explain outstanding landmarks - they are easier and faster to identify than the names of streets and highways. This is especially true in cities and congested areas.

7. Motorists should always be directed over main, easy to follow routes through cities, even though they may be slightly longer.

8. If streets are named in a numbered sequence, it sometimes helps to explain the numbering system.

9. Always identify highways, as State, Farm to Market, or U.S., giving the number of the highway. Describe the type of road such as concrete, asphalt, gravel, etc. This is always helpful in identifying routes.

10. Tell the approximate distance to "turns" in the route so the motorist can alert himself in advance of these route changes.

11. In giving directions, always relate only one route. This is especially true when directing someone through a city or congested area.

12. When asked for directions to a specific place, it is poor practice to reply by asking if the inquirer knows where some other place or landmark is located. Such conversation might go as follows:

"Can you tell me of another route I might take to avoid this detour?"

"Well, do you know where the old Sawmill Road intersects Main Street?"

"No."

"Do you know where the 35th Street Viaduct is?"

"No." (Wasted words)

13. If the directions you give are lengthy, you might ask the other person if he would like to repeat the directions to you to be sure he understands.

14. Never permit yourself to give directions mechanically. Try to be friendly and use diplomacy in dealing with all kinds of people.

15. Imagine yourself as the other person - how would you sound? Could you understand your directions? Could you follow them to your destination?

Pavement Breaker

PALMER MASSEY, *District Engineer*
DISTRICT 25

The photographs and sketch sheet show a pavement breaker developed in the District 25 Shop. This pavement breaker is now being used on a project that includes breaking out the old concrete in the worst places. This portion of the work is being done by our maintenance forces.

We attempted, unsuccessfully, to locate a satisfactory pavement breaker elsewhere, realizing the use of jack hammers, sledges, etc. would be too slow and costly. We have found this method of breaking out concrete pavement entirely satisfactory for our purpose.

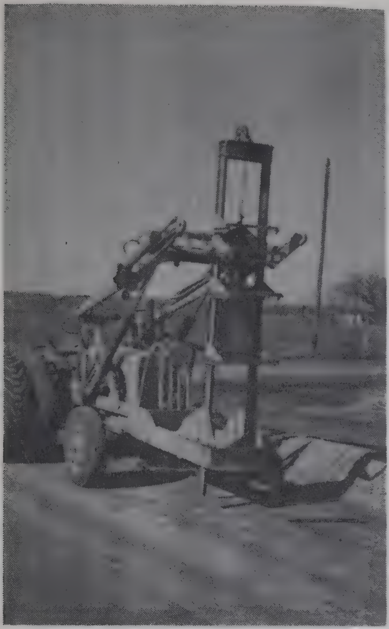
The breaking out areas will average about 100 square feet per section. It will break it out faster than the men can hand shovel the broken concrete onto the trucks. An acetylene torch is used to cut the reinforcing steel. Ordinarily the breaking out is completed by 10 A. M., leaving ample time to replace and compact the permanent base in the excavated section before night. On this particular project we are using hot mix asphaltic concrete, furnished by the contractor that is resurfacing this section of U. S. 287, between Quanah and Chillicothe. Density is obtained by using compressed air tamps with enlarged base areas.

Since we are breaking out the old pavement to existing cracks we find very little fracture is developed in the adjoining portion of the pavement to be left in place. The leads direct the hammer to the exact location needed to be broken. This also adds to the safety of the work. The hammer trips automatically and only one man is required to operate the machine.

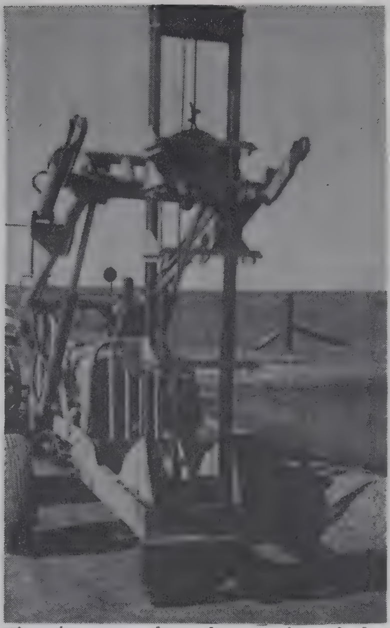
The only new materials used in the construction of this pavement breaker apparatus were the two channels for leads and the cable. The hammer was made from old salvaged four inch square axles welded together. The rig is quite mobile for either adjusting position for dropping the hammer or traveling down the highway to the next location. The whole rig can be readily assembled or dismounted on the Case tractor (Model S I) which ordinarily operated an Ottawa front end loader of 1/2 C. Y. capacity.

If any further information regarding construction or use of this pavement breaker is desired, please feel free to call on us and we will try to give it to you from the limited experience we have had. Credit for the construction of this apparatus goes to J. R. Long, Equipment Supervisor of District 25.

➧



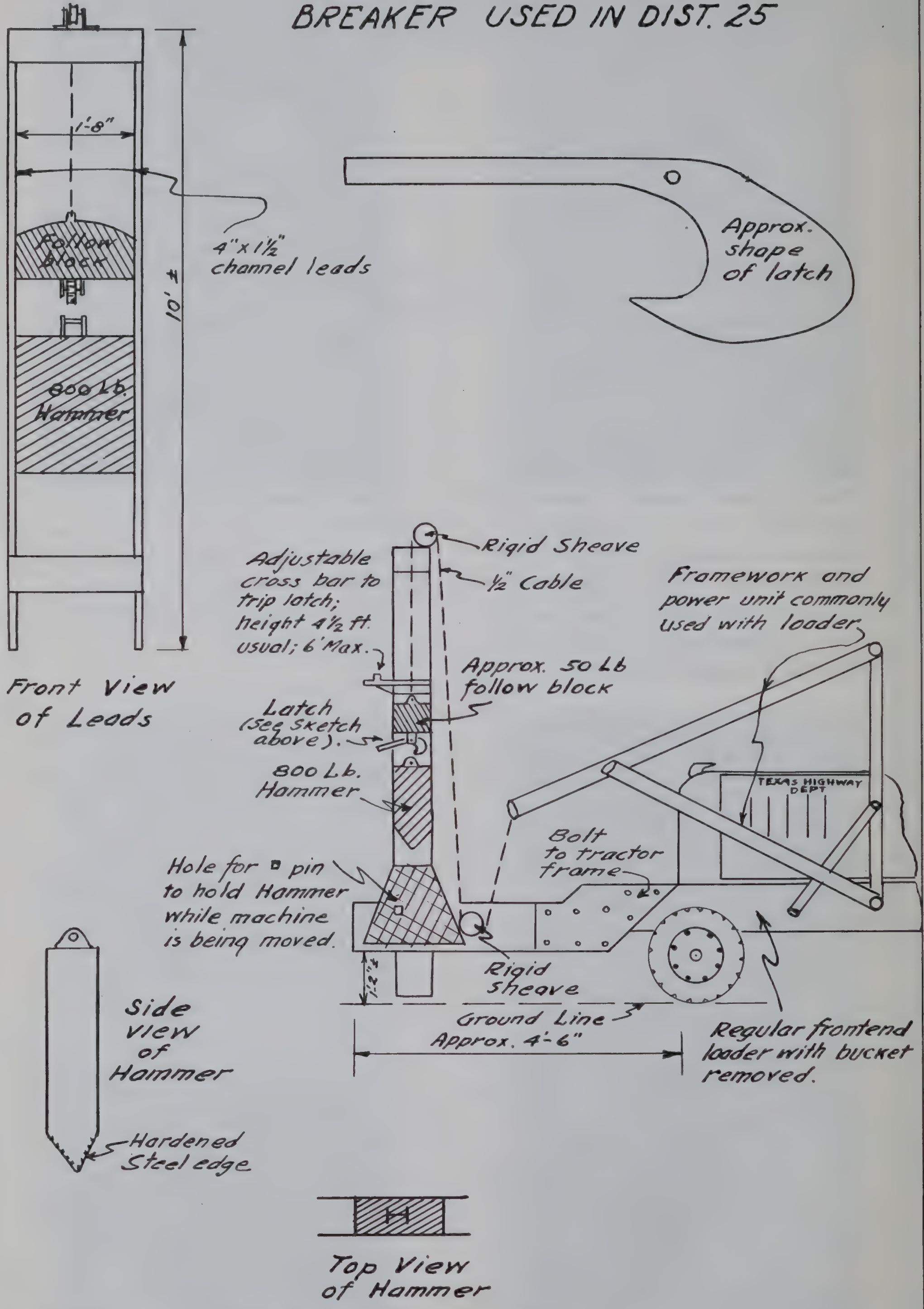
The 800-pound hammer is shown in a raised position. Maximum drop distance is 6 feet, but usual drop is 4 1/2 feet. An automatic trip releases the hammer, and leads extending almost to the pavement provide accuracy and safety.



The hammer has dropped and the follower block has not yet been lowered to it. Power is provided by the Case tractor and hydraulic lifts of a one-half yard Ottawa front end loader.

The two channels for leads and the cable were the only new materials the District 25 shop used in building the pavement breaker. Improved production, mobility, one-man operation, and minimum rigging up are features the District reports on this machine.

CONCRETE PAVEMENT BREAKER USED IN DIST. 25

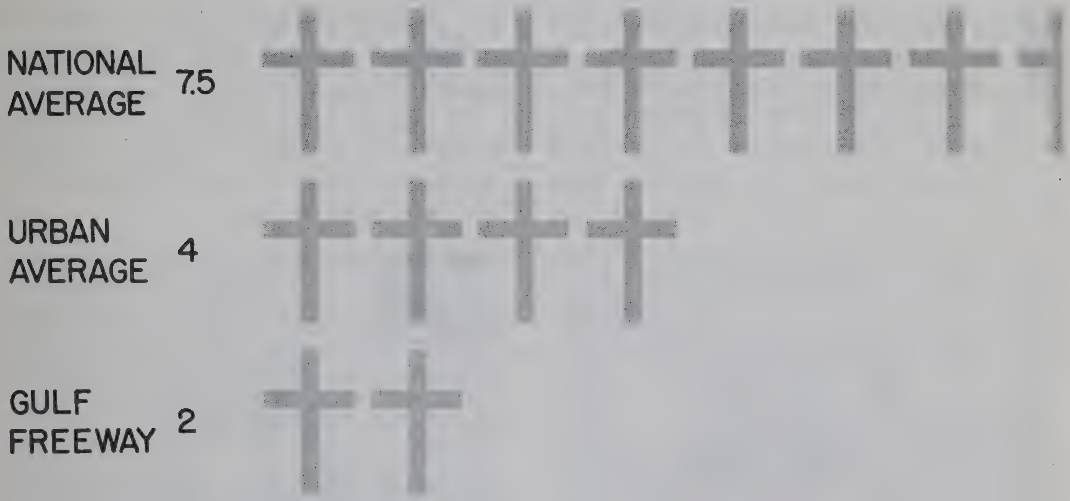


Facts and Figures . . .

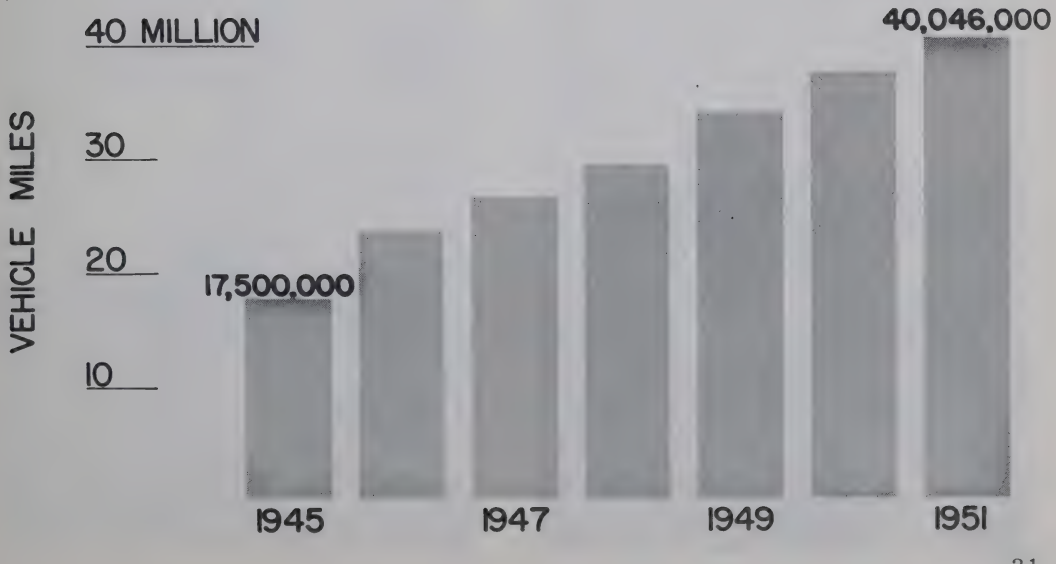
Compiled by Planning Survey Division

TRAFFIC DEATHS

PER 100 MILLION VEHICLE MILES



DAILY HIGHWAY TRAFFIC

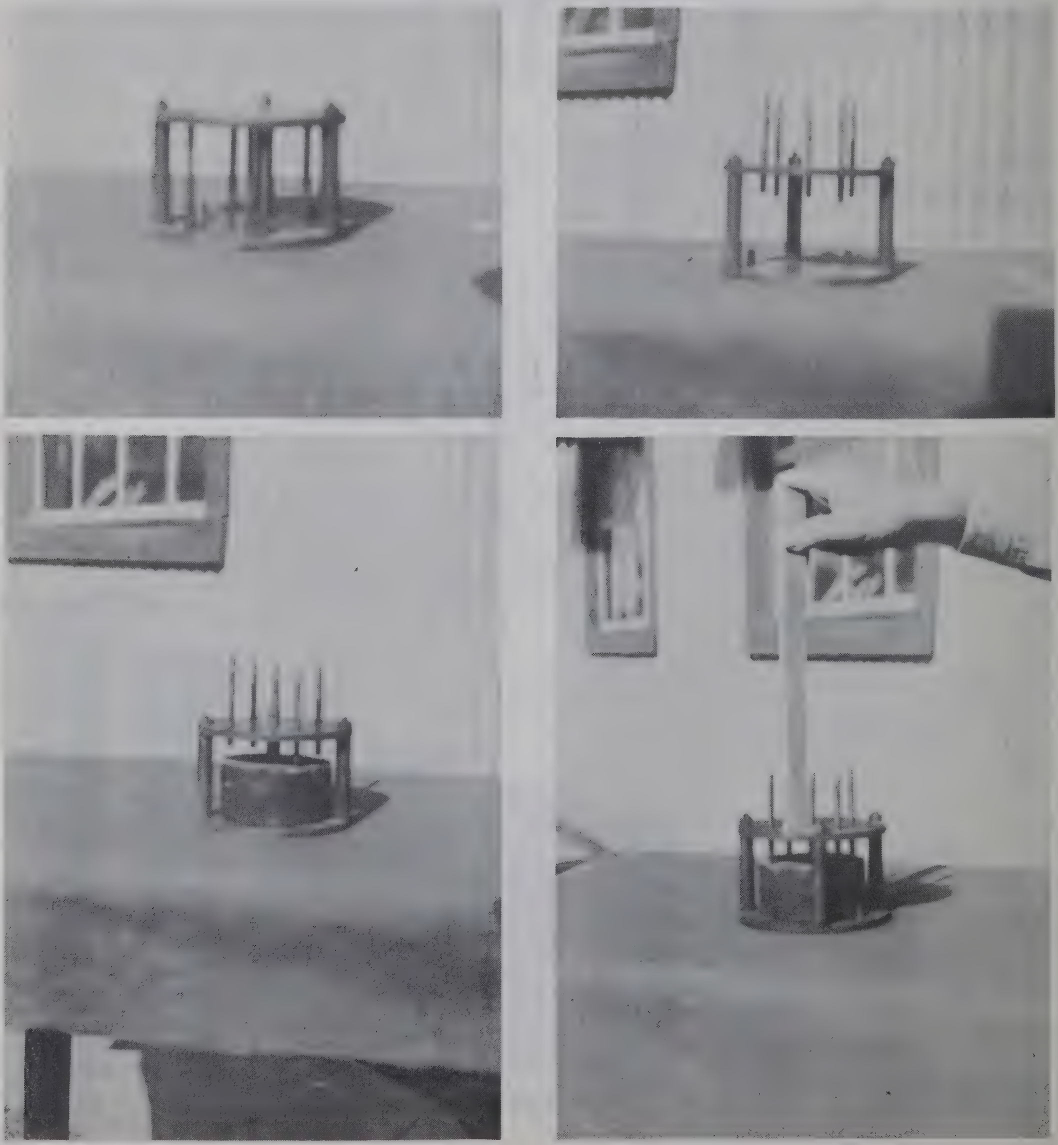


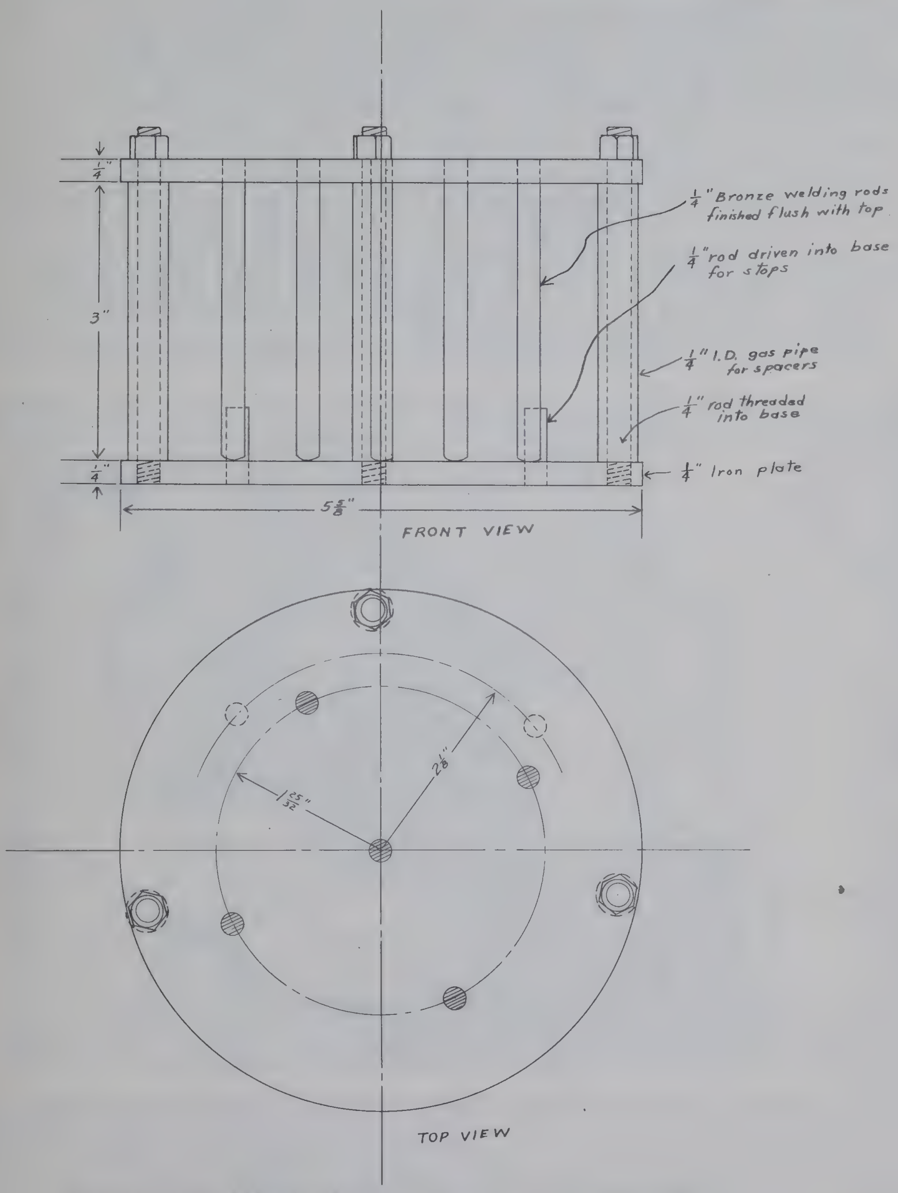
MEASURING THE HEIGHT OF ASPHALT SPECIMENS

G. A. YOUNGS, *Assistant District Engineer*
DISTRICT 19

This device for measuring the height of asphalt specimens was designed and made by Mr. Charles W. Dell, Chief Inspector of District 19. It is believed that the sketch and pictures are self-explanatory. You will note that the five rods are pulled up and held up by means of a rubber band while the specimen is inserted to a snug fit against the two "stops" which center it.

We have found this device to be very useful and believe it gives a good "average height" with a saving of time and minimum error.

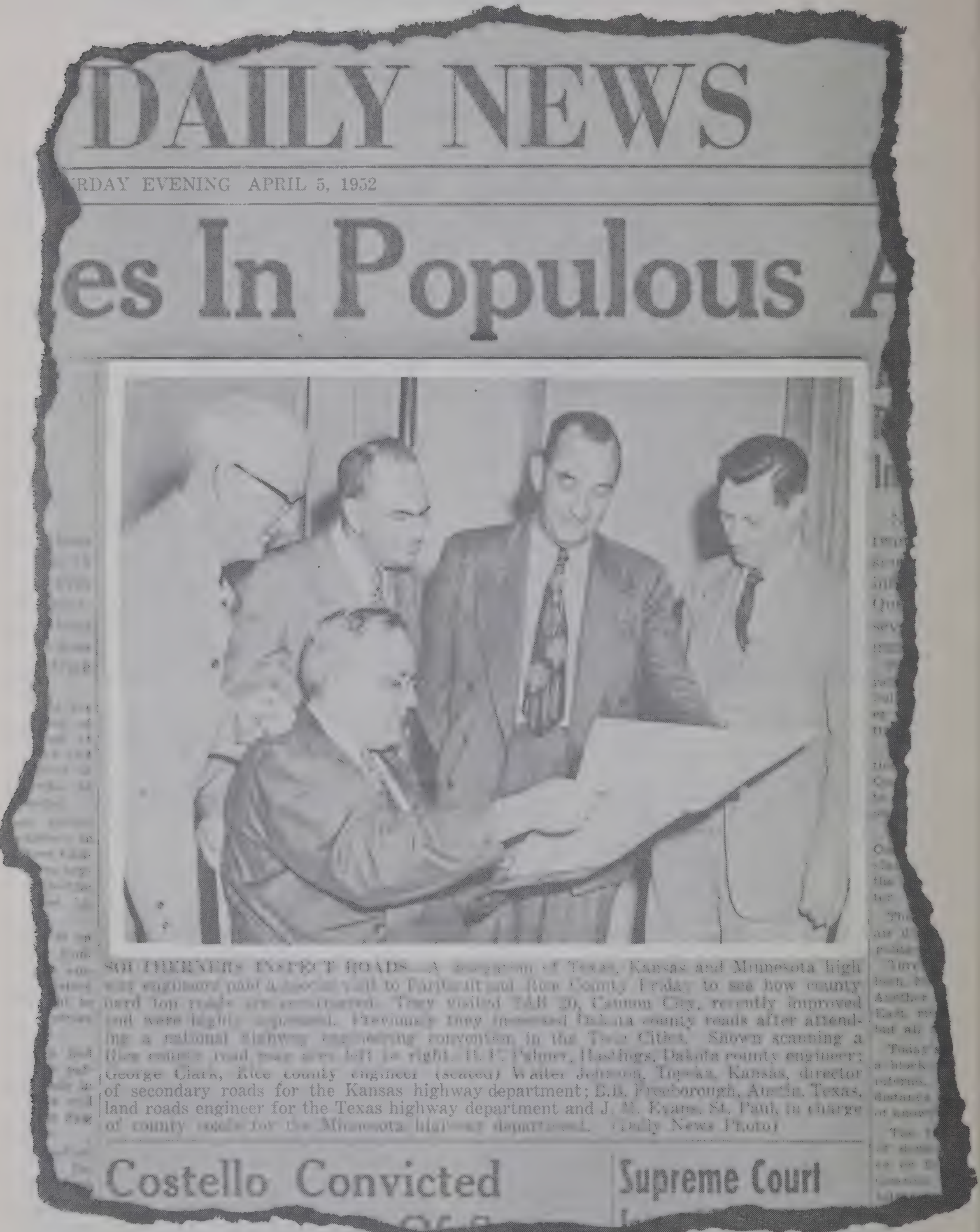



1/4"
3"
1/4"
5 5/8"
1/4" Bronze welding rods finished flush with top
1/4" rod driven into base for stops
1/4" I.D. gas pipe for spacers
1/4" rod threaded into base
1/4" Iron plate
FRONT VIEW
2 1/8"
1 25/32"
TOP VIEW

DEVICE FOR MEASURING HOT MIX AC SPECIMENS

Did You Say Southerners, Suh?

From the Faribault, Minnesota, Daily News, April 5, 1952



DAILY NEWS

RDAY EVENING APRIL 5, 1952

es In Populous A

SOUTHERNERS INSPECT ROADS—A delegation of Texas, Kansas and Minnesota highway engineers paid a special visit to Faribault and Rice County Friday to see how county hard top roads are constructed. They visited TAH 20, Cannon City, recently improved and were highly impressed. Previously they inspected Dakota county roads after attending a national highway engineering convention in the Twin Cities. Shown scanning a Rice county road map are left to right: H. F. Palmer, Hastings, Dakota county engineer; George Clark, Rice county engineer (seated) Walter Johnson, Topeka, Kansas, director of secondary roads for the Kansas highway department; E.B. Freeborough, Austin, Texas, land roads engineer for the Texas highway department and J. M. Evans, St. Paul, in charge of county roads for the Minnesota highway department. (Daily News Photo)

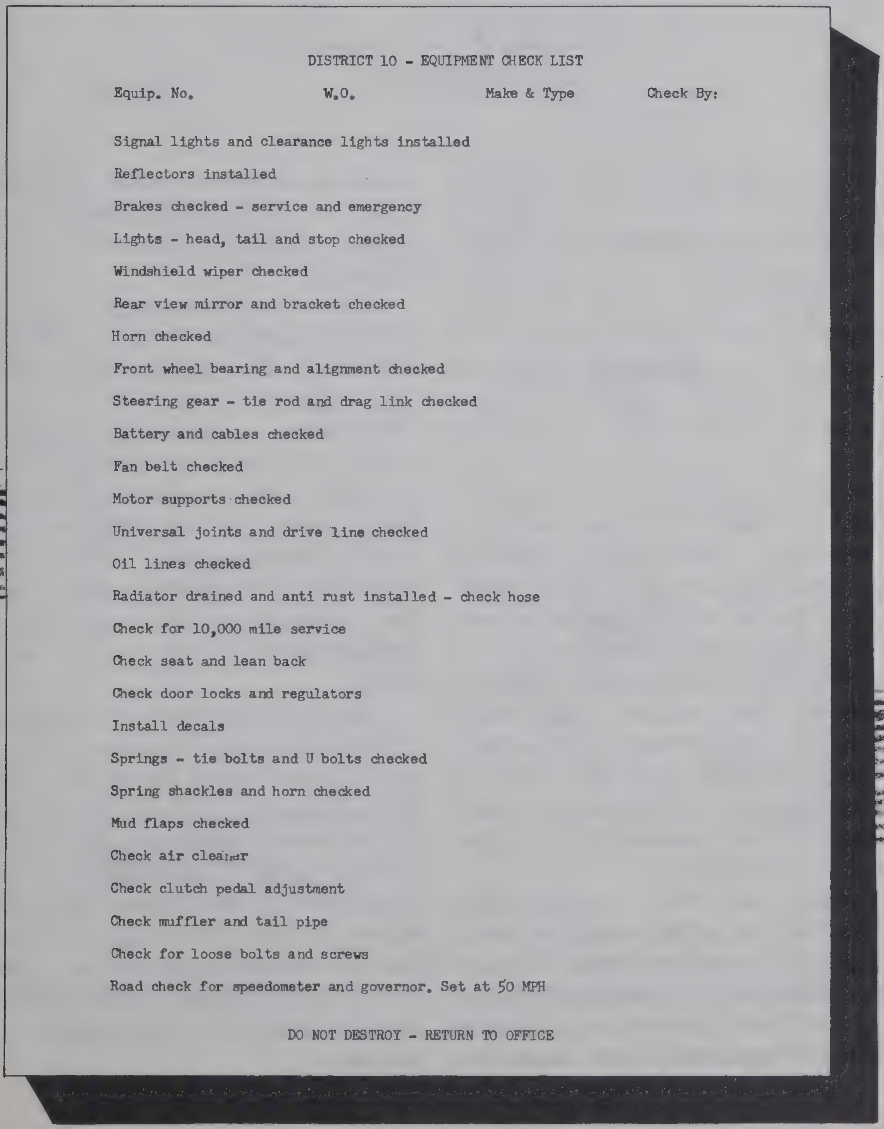
Costello Convicted

Supreme Court

Equipment Check List

District 10

T. A. McBride, District Equipment Supervisor, District 10, believes in effective records to keep tab on the work done on each truck going through his shop, but he is convinced that good mechanics do not make good bookkeepers. Mac solved this problem by designing a unique check list which is scotch taped on the windshield of each truck entering the shop. This list not only furnishes the various mechanics with a good guide for checking equipment, but it also places the responsibility upon the mechanic or mechanics who do the work.



DISTRICT 10 - EQUIPMENT CHECK LIST

Equip. No.	W.O.	Make & Type	Check By:

Signal lights and clearance lights installed

Reflectors installed

Brakes checked - service and emergency

Lights - head, tail and stop checked

Windshield wiper checked

Rear view mirror and bracket checked

Horn checked

Front wheel bearing and alignment checked

Steering gear - tie rod and drag link checked

Battery and cables checked

Fan belt checked

Motor supports checked

Universal joints and drive line checked

Oil lines checked

Radiator drained and anti rust installed - check hose

Check for 10,000 mile service

Check seat and lean back

Check door locks and regulators

Install decals

Springs - tie bolts and U bolts checked

Spring shackles and horn checked

Mud flaps checked

Check air cleaner

Check clutch pedal adjustment

Check muffler and tail pipe

Check for loose bolts and screws

Road check for speedometer and governor. Set at 50 MPH

DO NOT DESTROY - RETURN TO OFFICE

Truck-mounted Leveling Table

PROVIDES FOR QUICK BALANCE ADJUSTMENT UNDER FIELD CONDITIONS

T. A. CARLTON JR., *Sr. Laboratory Assistant*
DISTRICT 20

This leveling table was originally developed for use with a mobile tri-axial testing laboratory. However, the rugged nature and handiness of this equipment have made it readily acceptable for use by field crews as a quick means for adjusting balances used in measuring the weights of materials from density and moisture tests.

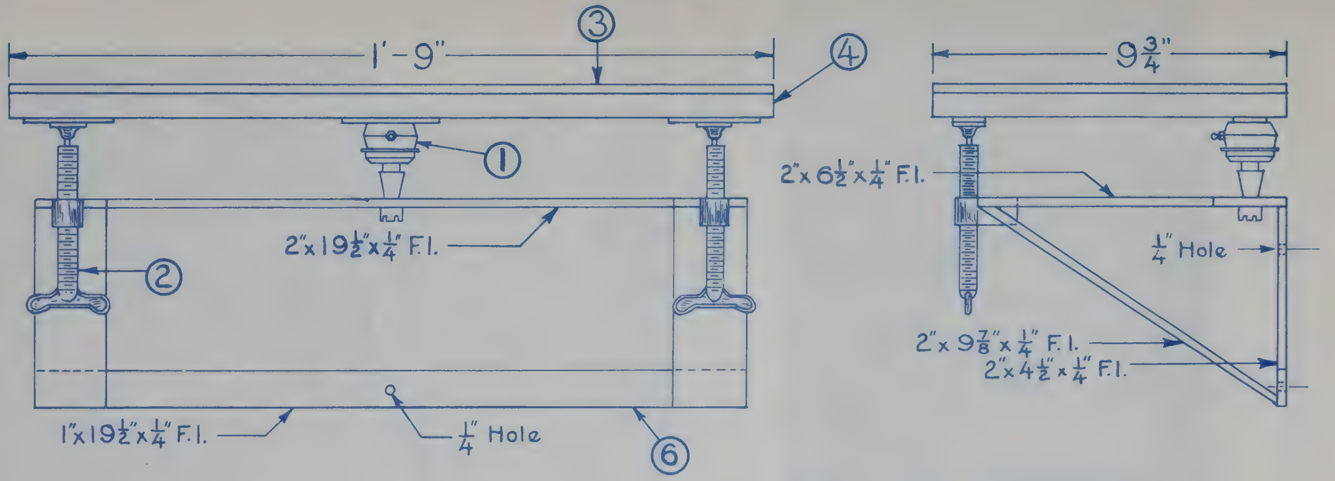
The principle of this leveling table is simple in that it is comprised of a plane surface, three-point leveling system and supporting frame work. To aid in the leveling operation one of the leveling points is fixed as to height but is free for limited rotation. This allows for proper adjustment under most conditions; however, should an extreme case develop this fixed point may be replaced by a third "C" clamp screw to allow for a larger amount of adjustment.

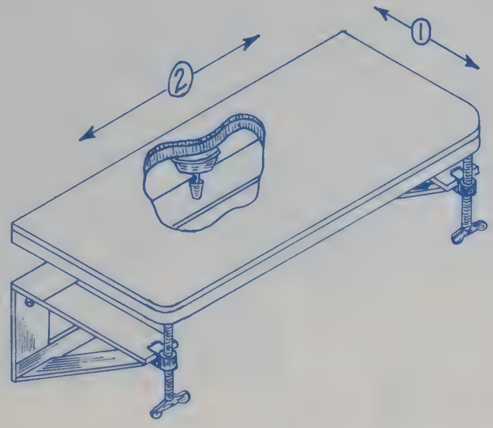
Referring to the accompanying sketch, the plane surface may be made of any durable, warp-resistant material if the table is to be mounted inside a vehicle or field laboratory. Should the table be mounted in the back of a pick-up truck or other exposed location, a base of heavy marine plywood with a masonite surface is recommended.

The fixed leveling point may be readily adapted from a tie-rod end, whereas the adjusting screws are made from four inch "C" clamps. These "C" clamp screws work rapidly and still allow for an accurate adjustment.

The frame work for support of the table may be cut and welded from 1/4" x 2" Flat Iron. The "C" clamp adjusting screws are then welded on, the leveling surface attached and the frame work bolted to the wall of the truck.

As an illustration of the adjustment of this table consider the surface to be out of level in the Number 1 direction. The adjusting screws are both turned in the same direction for this adjustment. For adjusting the level in direction 2, the screws are turned in opposite directions and the level bubble follows the right thumb. One additional check and minor adjustment should furnish a satisfactory level surface.


③
1'-9"
④
$9\frac{3}{4}$"
①
2"x$19\frac{1}{2}$"x$\frac{1}{4}$" F.I.
②
2"x$6\frac{1}{2}$"x$\frac{1}{4}$" F.I.
$\frac{1}{4}$" Hole
2"x$9\frac{7}{8}$"x$\frac{1}{4}$" F.I.
2"x$4\frac{1}{2}$"x$\frac{1}{4}$" F.I.
1"x$19\frac{1}{2}$"x$\frac{1}{4}$" F.I.
$\frac{1}{4}$" Hole
⑥



BILL OF MATERIAL

PC. NO.	NAME	MATERIAL	QUAN.
1	Tie Rod End	Steel	1
2	4" 'C' Clamp	Steel	2
3	Table Cover	$\frac{1}{4}$" Masonite	1
4	Table	$\frac{3}{4}$" Plywood	1
5	Frame	2" Flat Iron	5'-2"
6	Frame	1" Flat Iron	1'-$7\frac{1}{2}$"

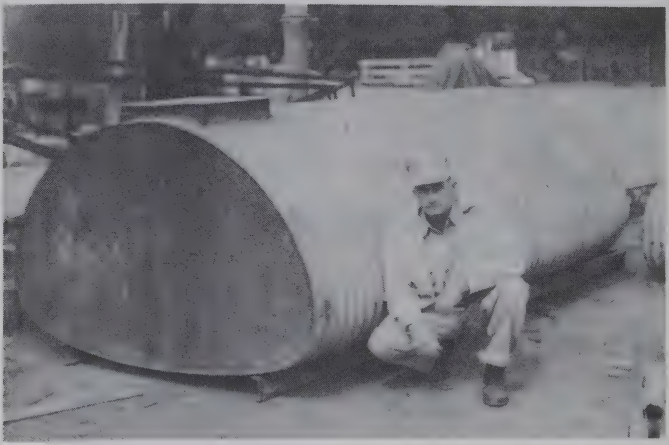
TRUCK MOUNTED LEVELING TABLE FOR LABORATORY BALANCES

Scale $\frac{1}{4}$" = 1"

H.L.V.
Dist.30

ABOUT THE DISTRICTS

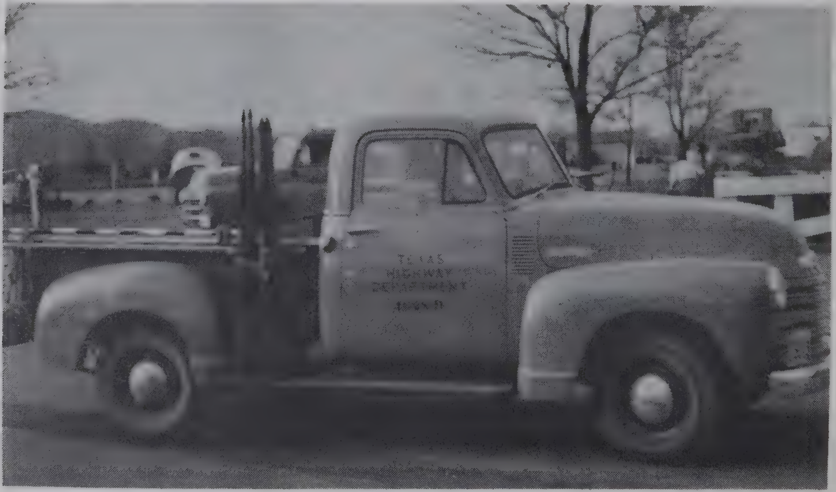
WATER TANKS - DISTRICT 15



The Department's inability to secure bids on water tanks has not bothered District 15. With one length of culvert pipe and some welding "know how" they have constructed a tank that is pleasing in appearance and structurally sound. Mr. T. S. Harrell is shown with his handiwork. Mr. Harrell handles the heavy welding in District 15.

DISTRICT 24 -

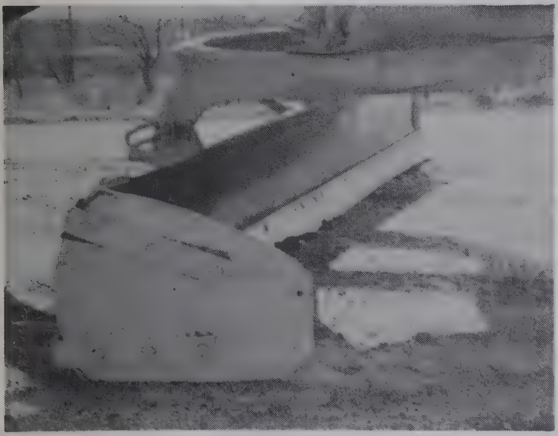
CHEVROLET PICKUP EQUIPPED TO CARRY INSTRUMENTS

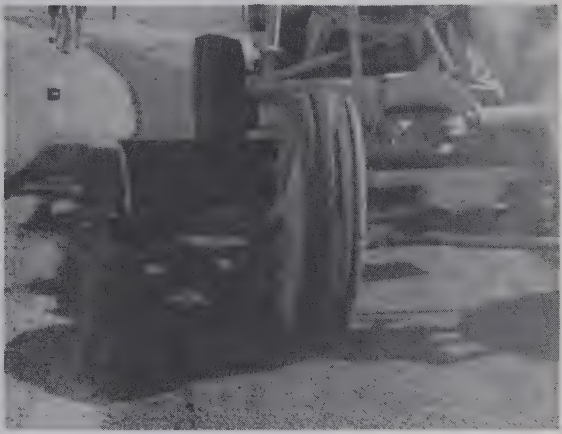


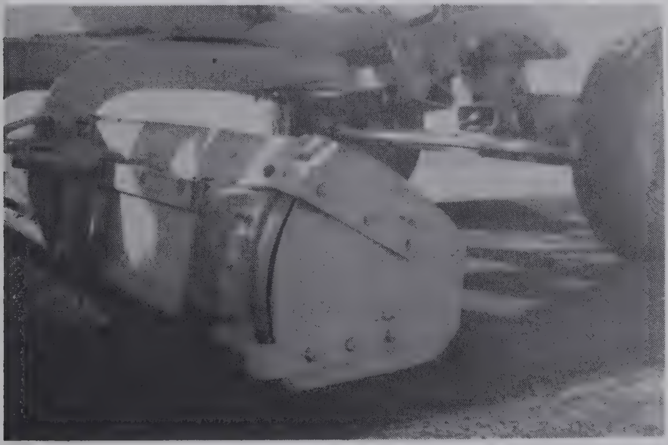
This pickup is used for a three-man survey party and carries tripods, line rods, and other instruments.

DISTRICT 2 -

SHOE ATTACHMENT ON MAINTAINER FOR EDGING ASPHALTIC CONCRETE







These pictures of a shoe attachment on a maintainer for edging asphaltic concrete were taken on S. H. 108 approximately one-half mile west of Mingus.

This attachment is very economically constructed by any blacksmith from a piece of traffic tread and two straps. It is readily installed or removed by two bolts through the moldboard. The traffic tread is slotted at each of the six bolts through the straps which facilitates adjustment of height of the shoe when desired as the blades are worn. It can be fitted to any of our medium or heavy maintainers; however, no adjustment is provided for.

We have found this shoe attachment very satisfactory in securing uniform edges with asphaltic concrete and blade mixes.

Kokernot Park on S. H. 17, Jeff Davis County—

GUARD FENCE

District 24

The guard fence here consists of concrete posts and seven-eighths-inch cable. The cable was salvaged from old guard fence. We consider this installation much more satisfactory than the standard cedar post planting at the roadside parks, and are currently replacing the cedar posts in a number of instances with this type of construction. This is also effective in controlling cars in the park area.

"Comments From the Traveling Public"
OVER THE HIGHWAYS

Yesterday I received the enclosed yellow slip when entering a section of new construction on Highway 90 just this side of Van Horn. I appreciated it and the very courteous manner in which the Texas Highway Department always acts.

In this day of crooked deals so prevalent in our National Government, it is wonderful to live in a State like Texas. I realize that not everything here is perfect, but in comparison our State Government is extremely efficient and honest.

I believe in passing out roses to the living; hence this letter.

Keep up the good work.

Sincerely yours,

Fred O. Williams
(Citizen of Texas)
Thank Heavens!

● ● ●

On the 14th of this month which was Monday, my wife and I came out of Dallas, returning home from a very delightful stay of a month at Mineral Wells. On your construction job I was handed a small request with heavy type marked "PLEASE DRIVE CAREFULLY!"

This is the first time I ever noticed traffic being handled so carefully thru construction or anywhere for that matter, and I wish to compliment you . . .

With my best wishes, believe me.

Clifford Waterhouse
Jackson, Mississippi

● ● ●

. . . More route numbers in and out of cities would be an improvement. We and others got on --- out of --- --- instead of ---, We enjoyed the good roads and the people.

A. M. Eidson
Weston, Ohio.

● ● ●

. . . We got lost entering all cities. The highway signs are not adequate. You need the name of the next city opposite highway number instead of North and South, or East and West. We liked your roads . . .

Mrs. W. P. Conner
Clayton, North Carolina

● ● ●

COMMENTS FROM OUT-OF-STATE DRIVERS ON TEXAS DRIVERS

Taken from Traffic Services Survey Cards issued to motorists stopping at Travel Information Bureaus.

● Sixty mile speed limit improperly observed by cars bearing Texas license . . .

● More discourteous drivers and more reckless drivers than we have ever encountered anywhere in the U. S. . . .

● People drive too fast and with too little regard for safety . . .

● We didn't like the fast driving by the residents. Too little consideration given the strange motorist by the local motorist . . .

● Drivers always trying to show off . . .

● Texans don't dim their lights at night. What's the matter, just showing they can take the brights? . . .

● Careless drivers . . .

● People don't observe the speed limits and weave back and forth from one lane to another . . .

● Texas people drive reckless and far too speedy especially in the cities . . .

● Texans drive too fast . . .

● We didn't like the discourtesy of Texas drivers . . .

● Travel after 3 P. M. dangerous -- beer served at Bar-B-Q stands. Results in high speed driving on too narrow roads for 85 - 90 miles per hour . . .

Instructions for Preparing Sketches for Use in the Bulletin

In the past, instructions and information were outlined on preparing pictures and manuscripts for best reproduction in the Construction and Maintenance Bulletin. However, further note might be made on preparing sketches. It has been necessary to redraw many sketches in the past, since blueprints or similar drawings were submitted. Please follow these suggestions when preparing sketches to be reproduced.

1. Blue line prints, ozalids, etc. will not reproduce. It is necessary to obtain the tracing or to redraw these.
2. Light penciled sketches will not reproduce clearly. Sharp, heavy penciled sketches will reproduce fairly well.
3. Send in original tracing, preferably in ink, when available. This will be returned to you in good condition.

If possible, prepare a vertical tracing in ratio to 7" wide by 10" high. This is not a necessity, but adds to the appearance of the Bulletin and eliminates having to turn the page sideways to look at sketches. If you do not have time or facilities for drawing ink or heavy pencil sketches, we will redraw them if necessary. The best drawing available should be submitted with your article.

WEEKEND ROAD CONDITION REPORTS . . .

Please phone all emergency road condition reports on weekends and holidays when the main office is closed to Dale Yarbrough, at 5-7823 in Austin, or to Tom Taylor, at 5-9939 in Austin.

IN MEMORIAM

On May 23, 1952, during heavy rains while patrolling roads to protect the traveling public, Adrian L. Ballard's truck was washed from the road by a sudden flash flood and he was drowned. Mr. Ballard was a valued maintenance employee of the Brownwood District having served faithfully and well for approximately twenty-five years.